# The relationship between drug use treatment waiting times and motivation to change

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# THE RELATIONSHIP BETWEEN DRUG USE TREATMENT WAITING TIMES AND MOTIVATION TO CHANGE

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**ABSTRACT**

International research has demonstrated the effectiveness of treatment for heroin abuse, yet many treatment-seekers fail to enter treatment when a place becomes available. Understanding the factors that encourage, or impede, treatment access and utilisation may help to attract more users into treatment. The waiting period prior to treatment entry is often listed among the most common barriers for those seeking treatment, yet little research has examined the motivation of substance users awaiting treatment entry or the patterns of substance use during this time.

This research programme investigated the associations between treatment waiting times and motivation to change heroin use through two empirical studies. The first study examined the use of a measure of motivation – the SOCRATES - to assess changes in motivation in a sample of heroin users starting a new treatment episode. The results indicated that the measure was capable of detecting changes in motivation over a three-month period.

In the second study, the SOCRATES examined changes in motivation among a sample of heroin users randomly allocated to short or prolonged waiting periods prior to treatment entry. The study found reductions in motivation over shorter waiting periods but no changes over more prolonged waits. Longer waiting periods were also associated with improvements in heroin use. Successful treatment entry was associated with motivation but not with the length of the waiting period.

The research programme found motivation is subject to change over the waiting period, with many reporting reductions in their motivation, regardless of the duration of delay. These findings suggest that the waiting period represents a missed opportunity for intervention, many treatment-seekers may lose motivation for change and continue to be exposed to the risks associated with drug use at a time when they express a desire for change. With a better understanding of the waiting experience strategies such as motivational enhancements or support during the waiting period can be implemented to help encourage treatment seekers into treatment.

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# CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

## 1.1 OVERALL RATIONALE

The purpose of this research programme was to determine the extent and nature of the relationship between waiting times to enter drug abuse treatment and patients' motivation to change their drug use and how this relationship impacts on treatment entry and substance use. Untreated drug and alcohol abuse inflicts a considerable burden on individuals and on society in terms of medical, social and economic problems. Substance abuse treatment can play an important role in reducing the incidence of many of these problems. However, only a small proportion of individuals who might benefit from treatment actually receive it. There is an increasing recognition that certain factors in the treatment environment may inhibit treatment seeking and entry.

Waiting times are a common and enduring feature of many drug and alcohol treatment programmes in the UK. While a number of studies have shown that the longer the user has to wait for treatment the less likely they are to enter treatment, little research has examined what factors may mediate this relationship. Motivation during treatment has been found to be related to outcomes such as reductions in substance use and successful completion of treatment, yet its role during the waiting period has not been previously examined.

The thesis proposes that the relationship between outcomes (e.g. treatment entry) and the amount of time spent waiting for treatment is mediated by drug users' motivation for change. The research programme will assess changes in the motivation of heroin users over the waiting period and assess how the length of the waiting period is related to these changes. It will also examine how waiting times and motivation are related to key treatment events such as treatment entry and patterns of substance use during the waiting period. With a better understanding of the waiting experience and how it may impact on motivation to change, treatment can be modified to help attract and engage more users into treatment. If motivation to change heroin use is associated with the speed with which services are delivered then a reduction in waiting times may preserve

patient motivation, lead to increased participation rates and reduce the harms associated with not receiving treatment.

## 1.2 OVERVIEW AND STRUCTURE OF CHAPTER ONE

This chapter provides a review of the research evidence on waiting times in substance abuse treatment services. It will also examine the role of patient motivation in treatment and will draw attention to the gaps in the current evidence base regarding the relationship between motivation and treatment waiting times. The chapter will conclude with the presentation of the conceptual framework to be used for examining the relationships specified within the current research programme and provide an outline of the overall structure of the thesis.

The literature is reviewed in three sections. The first section provides a brief description of the prevalence of substance abuse in the UK, the harms associated with substance abuse and the role of substance abuse treatment. This is followed by a review of the literature concerning the potential impediments to accessing substance abuse treatment, focusing on a specific treatment factor - waiting lists. The last section of the review will focus on the role of patient motivation in substance use treatment, and will make suggestions about the potential relationships between patient motivation, waiting times and treatment entry.

A literature review was carried out to identify relevant studies using the following data sources: PsychINFO, PubMed, ScienceDirect, Cochrane Library, Department of Health publications, in addition to manual searching and internet sources. The search was limited to documents available in the English language. Search terms included ‘substance use’, ’substance abuse’, ‘drug dependent’, ’alcohol dependent’ ‘treatment access’, ’treatment availability’, treatment entry’, ’waiting times’, ’waiting lists’, ’treatment delay’, ‘treatment barriers’, ‘motivation’, ‘motivation to change’, ‘readiness to change’. This review will draw from the literature of both drug and alcohol use from the UK and international literature.

The development of the research programme was designed specifically to address the gaps in knowledge in the area at the time of the commencement of the programme. The

literature review has been regularly updated since the initiation of the thesis and while the findings of the most recent studies will be discussed in the review, they were not used to alter the design or content of the studies carried out. Since the completion of the data collection for this thesis there have been major changes in the management of waiting times in substance abuse treatment services in the UK. Government initiatives and expenditure have been put in place to address some of the problems associated with drug abuse treatment entry. These changes and the implications for treatment will be reviewed in Chapter 5.

## 1.3 BACKGROUND

### 1.3.1 Defining substance abuse

Substance abuse is characterised by a pattern of excessive use of a substance, especially alcohol or a drug, which results in repeated adverse social consequences related to the substance use. This can include legal problems, failures to meet family, employment and social obligations and interpersonal conflicts. Rassool (2002) noted that whether substance use is classified as abuse or not depends on the socio-cultural conventions, the pattern and mode of consumption and the perception of the observer. The two main classification systems for psychiatric disorders, the World Health Organization's International Classification of Diseases (ICD-10, WHO, 1992) and the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, APA, 2000) adopt a multi-axial classification, recognising both the behavioural and physiological factors in diagnosis.

The DSM-IV-TR makes the distinction between substance abuse and substance dependence. Substance abuse is a term commonly used to describe the use of a substance for a purpose not consistent with legal or medical guidelines, such as the non-medical use of prescription medications with sedative or stimulant properties. Abuse, according to this classification, refers to the recurrent use of a substance without physiological dependence. Substance dependence, on the other hand, includes patterns of compulsive use, physical and psychological dependence and withdrawal. There are long-standing debates as to the exact distinctions between substance abuse, substance dependence, substance misuse, between alcoholism, alcohol abuse and alcohol dependence and drug abuse and drug dependence (Smedslund et al, 2009) but for the

purpose of this thesis the terms substance use and substance abuse will be used. In this context substance use refers to the taking of alcohol or illicit drugs, and substance abuse refers to the excessive use of alcohol or illicit drugs that are detrimental to the individual's physical and mental health or the welfare of others.

### 1.3.2 Prevalence of substance use in the UK

Alcohol and illicit drug consumption are widespread. There are several surveys conducted in the UK which seek to estimate the prevalence of alcohol and illicit drug use among the general population (e.g. British Crime Survey, Smith and Flatley, 2011; General Lifestyle Survey, Office for National Statistics, 2011), and among specific groups such as young people (Fuller, 2009). The 2010/11 British Crime Survey estimated that approximately 12 million people aged between 16 and 59 have used one or more illicit drugs in their lifetime and approximately 2.9 million people are estimated to have used illicit drugs in the last year (Smith and Flatley, 2011).

Alcohol consumption represents an integral part of modern culture. The vast majority of individuals in the UK who consume alcohol do so in moderation. Analysis of the patterns of alcohol consumption, however, reveals that a significant proportion of individuals are drinking above the UK recommended guidelines. The General Lifestyle Survey (ONS, 2011) found that 37 per cent of men and 29 per cent of women in Britain exceeded the recommended daily alcohol consumption guidelines (4 units per day for men and 3 units per day for women) on at least one day in the previous week. The proportion of men who drank heavily (8 or more units per day for men and 6 or more units per day for women) on at least one day during the previous week was 20 per cent compared to 12 per cent of women.

It is acknowledged that accurate information concerning the prevalence of substance use is difficult to obtain and that these surveys may underestimate the prevalence of substance use because of sampling biases and non-responses. The British Crime Survey, which samples adults living in private households in England and Wales, acknowledges that certain sub-groups of substance users are less likely to respond to population surveys or live in accommodation not sampled by these surveys, such as hostels or

prisons. Such groups, including the homeless, may have higher rates of drug use than those groups who are more likely to be surveyed (British Crime Survey, 2008).

### 1.3.3 Prevalence of substance abuse in the UK

Population surveys often fail to differentiate between occasional substance users and substance abusers. The identification of substance abusers is usually achieved when an individual comes into contact with a monitoring system such as the health or social system via general practitioners, substance use treatment centres and social workers, or the legal system via the police and courts or drug death and/or HIV registers. Estimates of the number of substance abusers who are not in contact with such systems are generally uncertain given the hidden nature of the behaviour (Griffiths et al, 2006). Results published by survey organisations are often extrapolations based on relatively small quantities of information from the available data sources. Bearing these problems in mind, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) estimated the number of drug abusers in the UK to be 398,845 in 2004-7 using data from recent studies (based on different time periods and definitions of problem drug use). This is a rate of 10.1 per 1,000 of the population aged between 15-64 years (EMCDDA, 2011).

The Alcohol Needs Assessment Research Project conducted in 2004 found 26% of the population aged between 16 and 64 years have an alcohol use problem which is equivalent to approximately 8.2 million people in England and a further 1.1 million people with alcohol dependence nationally (Drummond et al, 2005). However, under-diagnosis of alcohol abuse is common (Myrick and Wright, 2008; Truman, 2006) so the accuracy of such figures is uncertain.

### 1.3.4 The impact of substance abuse

Untreated drug and alcohol abuse inflict a considerable burden on individuals and on society as a whole. In recent years, mounting evidence has confirmed that heavy drug and alcohol consumption are linked to a host of medical and social problems affecting many levels of society. In the UK most of the widespread drug-related health and social problems are caused by the use of heroin and other opiates. Research has shown that the

most immediate and long-lasting problems caused by these drugs are often medical in nature. Among the more recent health issues related to drug abuse is the spread of drug-related infectious diseases including viral hepatitis and HIV/AIDS through needle and paraphernalia sharing, unsafe sexual practices or from mother to child (DeGennaro and Zeitz, 2009; Chen and Lin, 2009). Intravenous heroin use can also cause collapsed veins, bacterial infections of the blood vessels and heart valves, abscesses and other soft-tissue infections as well as liver and kidney disease (Licata et al, 2010; Buckland et al, 2008). Many of the additives in street heroin may include substances that result in the clogging of the blood vessels that lead to the lungs, liver, kidneys, or brain (Hoffman et al, 2008).

The death rate among drug users is higher than that expected in the general population. A meta-analysis using data from a variety of sources estimated the mortality associated with illicit opiate use to be over 13 times higher than that of the general age- and gender-matched population (Hulse et al, 1999). The Office for National Statistics reported a total of 2,747 deaths related to drug misuse in the England and Wales in 2010 (ONS, 2011). Drug users are also more likely to be involved in incidents of violence which may result in death (Moore et al, 2011; Darke et al, 2010).

Alcohol consumption has been shown to be causally related to over sixty different medical conditions and is a significant cause of morbidity and premature death worldwide. In the majority of cases there is a dose-response relationship, with risk increasing with the amount of alcohol consumed (Monforte et al, 1995). The alcohol-related death rate in the UK was reported at 13.6 deaths per 100,000 of the population in 2008, approximately 9,031 individuals (Office for National Statistics, 2010). Heavy drinking is linked to suicide (Borges and Loera, 2010; Landberg, 2009), incidents of violence (Laslett et al, 2011; Duke et al, 2011), fatal accidents and many fatal diseases. Drinking excessively over time has been associated with hepatitis and alcoholic liver disease (Jackson et al, 2010; Mueller et al, 2009), gastritis or pancreatitis (Franke et al, 2005), high blood pressure and stroke (Brummett et al, 2011; Parry et al, 2011). It has also been related to certain types of cancer, including breast, mouth and throat cancer (Boffetta et al, 2006; Su and Arab, 2004), damage to the brain (Jauhar and Smith, 2009), and cardiovascular disease (Room and Rehm, 2011; Ruidavets et al, 2010). Long term abuse of alcohol can cause a wide range of mental health effects (Boschloo et al,

2012; Barnett et al, 2007). Psychiatric disorders are common in alcohol abusers, especially anxiety and depression disorders, with as many as 25% of abusers presenting to treatment services with severe psychiatric disturbances (Grant et al, 2005).

Social problems related to the use of drugs fall into several categories, including economic factors, crime and disorder, and impact on families and communities. Illegal drug use imposes a vast financial cost on UK society through the increased costs of policing, incarceration, and healthcare utilisation to stem the flow of illegal drugs and to counter the associated negative consequences of drug use. It has been estimated that the national costs associated with illegal drug use in the UK is between £12 and £18 billion per year with drug-related crime accounting for 90 per cent of these costs (Gordon et al, 2006).

Societal, economic, family and personal costs are also associated with excessive drinking. Alcohol use significantly impacts on family life and is a significant contributory factor in incidents of domestic violence and neglect (Orford et al, 2005; Finney, 2003). The economic impact of excessive alcohol consumption is significant with estimates that alcohol-related crime and disorder costs up to £7.3 billion a year in the UK (Home Office, 2006). Reduced productivity and increased absenteeism from work due to either drug or alcohol use, and their associated ill-health, also contributes to the financial impact of substance use (McFarlin and Fals-Stewart, 2002).

### 1.3.5 The treatment of substance abuse

Substance abuse treatment can play an important role in reducing the incidence of many of the problems associated with substance abuse. Methods of treatment for substance abuse vary widely according to the types of substances used, the setting, the treatment philosophy, and the needs of the individual. The primary purpose of treatment is to minimise the risks associated with substance abuse by avoiding its psychological, legal, social and physical consequences (Gerstein and Harwood, 1990). Over the last three decades the treatment of drug abuse has taken on even greater importance. A large part of this is due to the pivotal role that intravenous drug use plays in HIV transmission and in the prevalence of HIV-related mortality and morbidity (Ball et al, 1998; Holmberg, 1996).

Pharmacotherapies have come to play an important role in the treatment of substance abuse. Methadone-based treatments for opiate addiction are the most widely used pharmacotherapy worldwide (Kreek and Vocci, 2002) and the most evaluated. Therapeutically prescribed doses of methadone relieve withdrawal symptoms, alleviate opiate cravings and allow normal functioning (Gerra et al, 2003). Other pharmacotherapies, such as buprenorphine, have also been used in more recent years to treat opiate problems (Carrieri et al, 2006; De Wet et al, 2005). These pharmacotherapies are often used in tandem with psychological therapies to understand the source of substance abuse problems and prevent relapse (Ball and Ross, 1991; Gronbladh and Gunne, 1989).

The types of programmes typically used to treat opiate abusers in the UK include methadone maintenance, methadone reduction, residential rehabilitation and in-patient programmes (Stewart et al, 2000). Methadone maintenance and methadone reduction treatments are typically delivered through drug dependence clinics or through general practitioners. Methadone maintenance treatment involves stable doses of methadone delivered over many years. Methadone reduction programmes provide methadone in progressively diminishing amounts to maximise withdrawal comfort with a goal of eventual abstinence. These substitution regimes are often delivered in conjunction with individual counselling (Hubbard et al, 1989). Residential rehabilitation programmes provide care 24-hours a day, generally in non-hospital settings, and are often effective for those with more severe problems. They are highly structured programmes, often committed to abstinence, where patients remain in residence for up to 12 months. They include therapeutic communities and Twelve-Step programmes (Miller, 1998; Stevens and Glider, 1994). In-patient programmes provide medically supervised detoxifications in conjunction with counselling. Different programmes have been found to differ in their effectiveness. For example, methadone maintenance treatment has been found to have substantially higher retention rates compared to out-patient counselling without methadone or residential programmes without methadone (Hubbard et al, 1989). Other studies have found poorer outcomes for patients treated with detoxification regimes compared to maintenance regimes (Gossop et al, 2001). Voluntary self-help groups such as Narcotics Anonymous (NA) exist which promote contact between drug users who share a desire to stop using drugs and members are encouraged to share their personal experiences with each other on their paths to recovery.

The National Treatment Agency for Substance Misuse (NTA) monitors the performance of the drug treatment sector through the National Drug Treatment Monitoring System (NDTMS) and information on individuals in treatment is collected on a monthly basis. The results, collated by Manchester University, identified 206,889 people aged 18 and over in contact with specialist, structured drug treatment in England during 2009/10. Of these patients 153,632 were receiving substitute prescribing (NDTMS, 2010).

Most treatments for alcohol abuse focus on helping the individual reduce and discontinue their alcohol intake, followed up with life skills training and/or social support in order to help them resist a return to alcohol use. The types of treatment available can be categorised into three groups – pharmacotherapies, psychosocial treatment and non-alcohol-focused specialist treatment. Pharmacotherapies treat alcohol problems with drugs for detoxification to prevent alcohol withdrawal (Mayo-Smith, 1997; Anton and Becker, 1995), relapse-prevention medications such as Antabuse (disulfiram) which causes severe discomfort when alcohol is ingested (Krampe et al, 2006) and Naltrexone which decreases cravings for alcohol and encourages abstinence (O'Malley et al, 1992). After detoxification, various forms of psychosocial intervention can be used to deal with underlying psychological issues related to alcohol abuse, as well as provide relapse prevention skills. These include Alcoholics Anonymous or Twelve-Step programmes which provide mutual-help group counselling. Non-alcohol-focused specialist treatments include coping skills, counselling, family work and complementary therapies.

Statistics from the National Alcohol Treatment Monitoring System (NATMS) reported that there were 111,381 patients in contact with structured treatment over the age 18 who cited alcohol as their primary problematic substance in 2009/10 and a further 31,733 patients who cited alcohol abuse as an adjunctive problem to a range of other primary problematic substances (NATMS, 2011).

### 1.3.6 The benefits of substance abuse treatment

National evaluation studies conducted over the last three decades have yielded consistent evidence that treatment for drug abuse is effective for a significant number of patients who enter treatment. Major reviews of the effectiveness of different treatment modalities including the Drug Treatment Outcomes Research Study (DTORS; Jones et al, 2009), the Drug Abuse Treatment Outcome Study (DATOS; Fletcher and Battjes, 1999), the National Treatment Outcome Research Study (NTORS; Gossop et al, 1998), The Drug Abuse Reporting Programme (DARP; Simpson and Sells, 1982), and the Treatment Outcome Prospective Study (TOPS; Hubbard et al, 1989). Many of these studies have found considerable evidence to suggest that drug substitution treatment can help opiate users in a number of important domains.

These and other studies have reported substantial reductions in the rates of heroin use and abstinence from illicit opiates in patients enrolled in methadone maintenance programmes (Connock et al, 2007; Teesson et al, 2006; Gossop et al, 2005). The most enduring reductions in heroin use have been found over long periods among patients who receive continuous treatment (Condelli and Dunteman, 1993; Hser et al, 1988). The research findings are mixed with regard to methadone maintenance treatment's effect on non-opioid drugs, although a number of studies have shown that when people enter treatment the use of other drugs often declines (Fletcher and Battjes, 1999).
Effective treatment of opioid dependence has also been shown to markedly reduce rates of criminal activity (Jones et al, 2009; Gossop et al, 2005).

Methadone maintenance treatment is effective in supporting improvements in many domains of physical health, mental health and social functioning. These include improvements in health status with access to medical care (Connock et al, 2007; Teesson et al, 2006), reductions in sharing drug injecting equipment among intravenous drug users and lower rates of HIV infection (Gowing et al, 2011; Connock et al, 2007). Lower death rates have been reported among individuals receiving methadone treatment relative to those dependent on opioids but not receiving treatment (Kimber et al, 2010; Mattick et al, 2009). Treatment has also been found to significantly increase the likelihood of being employed full-time (Anglin et al, 2009; Hubbard et al, 2003). Despite these benefits, drug dependence is a chronic condition in which drug abusers

commonly relapse and require numerous treatment episodes (O'Brien and McLellan, 1996). Gerstein and Harwood (1990) suggested that approximately twenty-five per cent of patients treated in methadone programmes will not respond well to treatment. Some have suggested that variability in outcomes may be associated with treatment variables such as methadone dose (Fareed et al, 2010; Strain et al, 1999) and the range of treatment services delivered (McLellan et al, 1994; Ball and Ross, 1991), factors which vary between and within different programmes (Stewart et al, 2000).

The evidence base for the effectiveness of the interventions for alcohol abuse is also strong and has been reported in several systematic reviews (Slattery et al, 2003; Berglund et al, 2003; Shand et al, 2003) and research trials (UKATT Research Team, 2005; Project MATCH Research Group, 1997). Improvements in alcohol consumption, alcohol dependence, alcohol-related problems and aspects of general functioning have been found in a number of studies, although trials have failed to demonstrate the superiority of any one widely practiced treatment modality over another (Raistrick et al, 2006).

### 1.3.7 Substance users in need of help

Despite the documented benefits of treatment for substance use, the literature suggests that only a small proportion of individuals who might benefit from treatment actually receive it (Drummond et al, 2005). Many substance users are unable to enter treatment or do not feel the need for treatment (Kaplan and Johri, 2000; Grant, 1997). In the US observers have reported that approximately 15-40% of drug users are engaged in some form of treatment for their drug abuse at any one time (Metzger and Navaline, 2003; Booth et al, 2001). Estimates of the ratio of treated to untreated individuals needing treatment for alcohol problems in the US ranges from 1:3 to 1:14 (Cunningham and Breslin, 2004; Kessler et al, 1999). In the UK, the Alcohol Needs Assessment Report Project found that only a third of alcohol dependent individuals referred to treatment actually access treatment (Drummond et al, 2005). It must be noted that comparisons between different substances or different countries should be made cautiously. Alcohol and drug use vary in many ways (e.g. drug use is illegal, alcohol use is not) and countries vary in their drug policies, legislation, and practical approaches to delivering treatment. All of these factors may influence access to treatment.

Of those substance users who seek treatment, there is often a time lag of many years between the onset of the problem and treatment seeking (Wang et al, 2007; Dennis et al, 2005). Early-onset users have been found to have higher rates of treatment seeking than older-onset users (Hingson et al, 2006; Kessler et al, 2001), and treatment seekers have more symptoms of dependence than those who do not seek treatment (Kessler et al, 2001).

## 1.4 TREATMENT ACCESS

The National Treatment Agency for Substance Misuse (NTA) was established by the government in 2001 to manage the expansion of drug treatment services as recommended by The Advisory Council on the Misuse of Drugs (1993) and the government's strategies, Tackling Drugs Together (Home Office, Department for Health and Department for Education, 1995) and Tackling Drugs to Build a Better Britain (President of the Council, 1998). The NTA aimed to increase the participation of problem drug users, and the availability, capacity and effectiveness of treatment for drug abuse in England in order to minimise the harms associated with drug use (NTA, 2002). However, this objective assumed that all individuals who needed treatment could receive treatment. Universal eligibility and the removal of financial barriers to health care were among the founding principles of the National Health Service in the UK. However, problems of access to treatment of any form have been a serious problem in the Health Service for many years (National Audit Office, 2001) and specifically for substance abuse treatment. In 2001 the UK government proposed that 'patients will get fair access to consistently high quality, prompt and accessible services right across the country' (NHS Executive, 2001). However, to achieve this 'fair access' it is important to understand why some people access treatment while others do not.

### 1.4.1 Barriers to treatment access

Research into the factors impeding treatment seeking and utilisation is critical to understanding why a greater number of people do not seek or receive treatment for their substance abuse problems. Discussions of help-seeking and service utilisation frequently focus on the influence of *barriers to treatment*. The term 'barriers' is used to describe characteristics of the individual, or aspects of service provision, that restrain or

serve as obstacles to the person receiving health care. Schober and Annis (1996) defined barriers as “the reasons people have for not utilising specialised addiction services or not modifying the target problem behaviour”. Similar definitions have been used by other investigators (Tsogia et al, 2001; Cunningham et al, 1993).

Many studies on help-seeking behaviours and barriers have focused on medical and mental health care utilisation (Anderson, 1995; Beckman and Amaro, 1986). While these studies are useful in explaining behaviour, generalisations from medical and mental health settings to substance abuse settings are difficult as drug use is illegal and treatment utilisation is highly stigmatised (Hser et al, 1998). Factors that influence or impede substance misuse treatment access and utilisation may therefore be different from those factors that influence different types of medical and mental health service utilisation.

Barriers to seeking substance use treatment or entering treatment have been examined with different populations of substance users to better understand treatment utilisation. These populations have included both alcohol- and drug-using patients engaged in treatment (Cunningham et al, 1993; George and Tucker, 1996) former treatment patients (Neale et al, 2007), substance users seeking referral to treatment (Hser et al, 1998), untreated substance users identified from population surveys or through media solicitation (Grant, 1997; George and Tucker, 1996) and substance users who solved their problems without treatment (Cunningham et al, 1993; Biernacki, 1986). Although many of these studies are descriptive accounts, they have identified a variety of factors believed to deter or encourage access to treatment (Kaskutas et al, 1997; Finney and Moos, 1995).

Barriers to substance use treatment have generally been conceptualised along internal and external dimensions (Hser et al, 1998; Melnyk, 1990). Allen (1994), for example, defined internal treatment barriers as “subjective phenomena - beliefs or perceptions arising from within the person” and external barriers as “health care system, structural characteristics of a programme, and socio-cultural-environmental factors.” Neale et al’s (2007) review of the literature found barriers relating to individual factors were divided into (1) demographic characteristics and personal circumstances, and (2) psychological states of mind and treatment expectations. Drumm et al (2003) categorised barriers into

personal attributes, social and material resources, provider characteristics and convenience in accessing services, from interviews with out-of-treatment drug users. For the purpose of this review, barriers to treatment will be presented under the broad categories of patient barriers and treatment barriers (Schober and Annis, 1996; Thom, 1984).

### 1.4.2 Patient barriers

The literature on barriers has examined a broad range of patient factors that may interfere with treatment entry among alcohol and drug users. A number of studies have shown that ethnic differences in health beliefs, perceptions about substance use problems, and treatment system biases such as cultural and ethnic differences between patients and providers, may hamper treatment access (Dana, 2002; Farabee et al, 1998; Kaskutas et al, 1997). Other studies have failed to find a relationship between ethnicity and treatment entry (Hser et al 1998; Riley et al, 1997).

Research into the influence of age has found the likelihood of seeking treatment increases with age up to the mid-30s and then declines (Pfeiffer et al, 1991), therefore younger and older people may be experiencing significant obstacles in accessing treatment (Hajema et al, 1999). Grant (1997) found that certain barriers such as transportation for older people and time constraints for younger people may serve as age-specific barriers to treatment entry. Other studies have failed to demonstrate age as a barrier to successful treatment entry (Hser et al, 1998; Tucker, 1995).

A number of studies have shown that women are more likely than men to encounter barriers that prevent them from seeking or following through with treatment (Brady and Ashley, 2005). Women are more likely to experience economic barriers to treatment (Brady and Ashley, 2005). This is particularly relevant in American populations where health care is heavily dependent on private health insurance financing. Other studies have failed to find an association between treatment entry and gender (Grant, 1997; Zule et al, 1997).

It has been suggested that characteristics such as age, gender and ethnicity are not actual barriers to treatment access but may indirectly influence entry through their interaction

with other factors (Rapp et al, 2006). Examples of this include the lack of childcare facilities in many treatment services which may restrict women's ability to utilise services (Smith, 1992; Beckman and Kocel, 1982). Grant (1997) also found that female problem drinkers often reported that they did not know where to seek help, which may suggest that females may be more likely to access treatment through less conventional routes such as through family and friends.

Substance use factors have frequently been identified as barriers to treatment. Greater severity, and higher levels, of substance use have been shown to be associated with treatment utilisation (Hser et al, 1998; Allen, 1994; Price et al, 1990). This may be partly accounted for by reports that substance users delay accessing treatment until their problems become acute or unmanageable (Drumm et al, 2003). The relationship between the severity and the level of substance use and treatment utilisation has not been found in all studies (Carroll and Rounsaville, 1992; Hartnoll and Power, 1989). History of prior substance abuse treatment has also been found to be an impediment to treatment access (Zule et al, 1997; Messer et al, 1996). In many studies this was related to the amount of success the patients had experienced during previous treatment episodes.

Substance-related psychosocial variables may also serve as barriers to treatment entry (George and Tucker, 1996; Thom, 1987). Problem recognition has been found to be important for treatment access in a number of studies with substance users delaying, or not seeking, treatment because they felt that their substance use was not serious enough to warrant attention (Finney and Moos, 1995; Cunningham et al, 1993). Fear of stigmatization (Grant, 1997; Cunningham et al, 1993), belief in solving one's own problems (Williamson and Fast, 1998; George and Tucker, 1996), and anxieties about treatment (MacMaster, 2005; Appel et al, 2004) may influence whether a person accesses treatment or not. Higher levels of psychiatric distress (Smith, 1992), symptoms of depression and low self-esteem (Finney and Moos, 1995) have been demonstrated as predictors of treatment entry, although a number of studies contradict these findings (Hser et al, 1998). Feelings of guilt, embarrassment and fears of failing treatment have also been cited amongst the reasons for not seeking or entering treatment (Cunningham et al, 1993; Sheehan et al, 1986).

Despite the large number of patient barriers which have been associated with treatment entry and utilisation, studies have failed to provide any conclusive evidence as to why some substance users choose to enter treatment while others choose not to (Tsogia et al, 2001; Hser et al, 1998). Few studies have examined the complexity of barriers to treatment or the interactive effects, or interdependence, of different factors (Rapp et al, 2006; Tsogia et al, 2001). Anderson (1995) noted that barriers which influence health care utilisation are "dynamic and recursive" and do not exist independently, possibly explaining why one individual determinant of treatment access has not been consistently identified in research studies. A number of methodological weaknesses in the body of research into barriers to treatment access have been cited. These include the over-reliance on quantitative designs and retrospective data collection, the latter which may interfere with the perception of events influencing help-seeking (O'Doherty and Davies, 1987). Many studies have failed to report on the timing of data collection and the type of treatment programmes entered, which has led some to question the generalisability of the findings (George and Tucker, 1996; Weisner, 1990). While the majority of the barriers to substance abuse treatment research have been conducted in North America it cannot be assumed that patterns of help-seeking, service policies and provision can be applied to the British situation (Neale et al, 2007).

### 1.4.3 Treatment barriers

Previous research has suggested that the availability and characteristics of services are, in part, responsible for determining patterns of health care utilisation. Anderson's conceptualisation of health care utilisation (Anderson, 1995; Anderson and Newman, 1973) stresses that although individual determinants may act as enabling or inhibiting factors, the characteristics of the health care system may interact to influence health care access and utilisation. Although few studies have examined the characteristics of substance use treatment services (Schober and Annis, 1996; Allen and Dixon, 1994), those which do exist have shown the importance of a number of characteristics that may impede treatment entry. These include characteristics of individual treatment programmes, such as personnel and programme components (Leigh et al, 1984; Baekeland and Lundwall, 1975), operating aspects such as opening times or the absence of appropriate services for groups such as women (Hser et al, 1998; Wilke, 1994), and

treatment availability and admission difficulties (Rapp et al, 2006; Wenger and Rosenbaum, 1994).

Hser et al (1998) studied 105 drug users who did not enter drug treatment in the US after the referral process. The patients were allowed to give multiple reasons for not participating in the programme. Fifty-nine per cent of the drug users interviewed cited service barriers as reasons for not entering treatment. These included programme admission eligibility problems, financial difficulties, not wanting to be on a waiting list or being on a waiting list too long, problems with transportation, and scheduling conflicts. The remaining reasons were largely attributable to the patient and included difficulties making arrangements to enter treatment, arrest or incarceration, ill health or deciding to stop using drugs on their own.

Similar service barriers have been cited in other studies (Neale et al, 2007; Donmall et al, 2005; Appel et al, 2004). Farabee and colleagues (1998), for example, gathered data from 2613 street drug users in North and South America who reported having tried unsuccessfully to enter drug abuse treatment over the previous year. Excluding participants who cited both individual-based and programme-based reasons for not entering treatment, 72.1% attributed their failure to enter drug treatment to programme-based reasons, with the most commonly cited reason being that the programme did not have room. The cost of treatment and the strict admission criteria were also cited. Only 14.5% of the drug users cited solely individual-based reasons (e.g. failed to attend a scheduled appointment).

### 1.4.4 Treatment availability

While participation in substance abuse treatment has frequently been associated with positive outcomes, to achieve these benefits substance users must be able to enter treatment after they have made the decision to seek help. Joseph and Poyner (1982) stated that unless services are ‘available’, there can be no consideration of the factors that differentially influence or impede access of individuals to services. The treatment utilisation models proposed by Aday and Anderson (1974) and Rosenberg and Hanlon (1982) both mention the importance of capacity, or the availability of supply, in

understanding treatment access. Treatment availability is typically measured in terms of treatment slots, hours of operation and waiting times.

## 1.5 WAITING TIMES

The following section will review the literature on the existence and consequences of waiting lists imposed in many substance abuse treatment services. Research will be presented on the effects of being placed on a waiting list in terms of the risks and harms associated with delays to enter treatment and the likelihood of entering treatment when a place becomes available. The review will draw upon literature from both drug and alcohol abuse populations and treatment services, although it is acknowledged that differences between these two populations and types of services exist.

At the beginning of this research programme there were concerns surrounding the existence of extensive waiting times in drug treatment services. An increase in the number of heroin users over the previous three decades and the associated risks of HIV infection led to a major expansion of drug abuse treatment. However, this level of demand led to an insufficient capacity of many publicly-funded treatment facilities to provide help to all individuals who requested treatment (Guydish and Muck, 1999). As a result of this insufficient capacity many services imposed waiting lists. A waiting list is defined as a 'list of persons who have applied for treatment but for whom a treatment position is not presently available' (Yancovitz et al, 1991). Until recent years the definition of waiting times was not standardised. Some treatment programmes included an applicant on a waiting list after an initial telephone or face-to-face contact, others after referral from another source had been received and others after an initial assessment had been conducted.

There are an undetermined number of substance users on treatment waiting lists and an unmeasured number of substance users who desire treatment but who do not apply for treatment. A number of studies have examined the prevalence of waiting lists in drug treatment services and the length of time drug users are required to wait for treatment. Stewart et al's (2000) examination of 54 drug treatment programmes representative of the main treatment modalities in the UK, found 67% of methadone reduction programmes, 31% of methadone maintenance programmes and 87% of in-patient

facilities operated waiting lists. Average waiting times were over six and a half weeks for methadone maintenance and reduction programmes, and over 12 weeks for inpatient services. Luty (2002) reported the widespread use of waiting lists across England and Wales for community/out-patient drug treatment. The mean waiting time for assessment of any drug problem was 7.2 weeks. The average time from referral to receiving medication was 10.6 weeks. Donmall et al's (2005) national survey of drug services in England also reported the widespread use of waiting lists in substitute prescribing and in-patient services with average waiting times from referral to treatment entry of 12 weeks, with a quarter of treatment-seekers waiting for 16 weeks or more. The Alcohol Needs Assessment Research Project found the average waiting time for assessment at an alcohol treatment service in 2004 was 4.6 weeks (4.1 weeks for community agencies and 5.5 for residential agencies) with mean waiting times in excess of 6 weeks in some regions (Drummond et al, 2005).

Tackling excessive waiting times for drug users to access treatment was highlighted as a priority when the NTA was established (Department of Health, 2001). The Updated Drug Strategy of 2002 called for "maximum waiting times from referral to receipt of treatment should be no more than two weeks for in-patient detoxification and G.P. prescribing and three weeks for all other types of treatment" (Home Office, 2002). Providing treatment for drug users is a government priority, yet at the commencement of the research programme there was comparatively little provision of treatment for alcohol-related problems despite the number of problem alcohol users exceeding the number of problem drug users by several million (Drummond et al, 2005). The Alcohol Harm Reduction Strategy for England noted an insufficient focus on alcohol treatments and limited information on the extent to which existing levels of service provision meet demand (Prime Minister's Strategy Unit, 2004). A Needs Assessment conducted for the Department of Health (Drummond et al, 2005) found an extensive gap between the need for alcohol treatment and access to treatment with only approximately 1 in 18 (5.6%) alcohol dependent individuals accessing specialist alcohol treatment nationally per annum. It also found the absence of dedicated funding and no targeted waiting time limits for alcohol treatment. The reasons for these findings are unclear but may be a result of the government's focus on reducing the rates of acquisitive crimes committed by drug users by encouraging treatment participation. Alternatively it may be due to the fact that alcohol consumption, even excessive consumption, is more socially acceptable

and has less stigma attached to it than illicit drug use and so may be deemed as less of a problem.

### 1.5.1 The relationship between waiting times and treatment processes

The waiting period is one of the first events a treatment-seeking substance user will experience of a specific treatment episode, yet little is known about the effects of being placed on a waiting list, or of the relationship between the waiting experience and subsequent patient experience in treatment. As Brown et al (1989) states

> " in spite of the increasing reports of the need to employ waiting lists, and their significance for the users and the treatment program, there is a virtual absence of research in this area, with the exception of those studies using waiting list controls".

The waiting period is often listed among the most common barriers for those seeking treatment in both qualitative (Stevens et al, 2008; Redko et al, 2006; Neale et al, 2007) and quantitative studies of substance users (Rapp et al, 2006; Appel et al, 2004). Porter's (1999) study on Puerto Rican long-term heroin injectors found the waiting period to get into treatment initially and then between detoxifications and "rehabs" was described as a major structural barrier that affected all heroin injectors. Similar reports were found in other studies of heroin users seeking methadone maintenance treatment (Wenger and Rosenbaum, 1994) and among crack-cocaine users in the US who reported having tried unsuccessfully to enter substance use treatment over the previous year (Farabee, et al, 1998). Interviews with out-of-treatment drug users in the UK revealed that the ease or convenience of getting services and the level of convenience of moving through the treatment system was a priority (Drumm et al, 2003).

Research into patient waiting times has not been extensive. Yancovitz et al (1991) attempted to perform a series of meta-analyses on the scientific data on waiting lists but were unable to due to the lack of published data. The literature examining treatment waiting times can be divided into three main areas: (1) treatment entry, (2) treatment retention, and (3) patient behaviour during the waiting period.

### 1.5.2 Treatment entry

A large number of studies have found that many substance users seeking treatment for their substance abuse problems fail to enter treatment once a treatment place becomes available. A number of investigators have shown that even after substance users undergo an initial assessment, the likelihood that they will actually enter treatment is often less than 50% (Hser et al, 1998; Stark, 1992; Agosti et al, 1991; Ball and Ross, 1991). These high rates of 'pre-treatment attrition' (Gottheil et al, 1997) are problematic as substance users who fail to enter treatment may experience a continuation of the problems which spurred the help-seeking activities (Brown et al, 1989). Waiting list attrition also represents a missed opportunity for treatment intervention (Brown et al, 2002) as substance users who do not enter treatment will fail to receive any of the benefits of treatment. An American study (Watters and Cheng, 1991) found that nearly 50% of the out-of-treatment drug users they interviewed said they would enter treatment "tomorrow" if a treatment place were available.

Studies on waiting times have largely focused on the relationship between the length of the waiting period and the likelihood of treatment entry. Research findings have been fairly consistent over several decades. Typically, the longer substance users have to wait between initial assessment and the start of formal treatment, the less likely they are to follow through with treatment (Hser et al, 1998; Orne and Boswell, 1991). Festinger et al (1995) proposed that the first 24-hours after a patient's initial phone contact is a critical period in initiating treatment. They found that of the 235 cocaine users who called for an initial treatment appointment at a community out-patient service, 58% did not attend the appointment. The greater the delay between the phone-call and scheduled appointment the less likely they were to show. The percentage of patients attending the initial appointment fell from 83% to 57% in the first 24-hour period following the phone contact. Two other studies have shown that waiting periods greater than 7-8 days substantially reduced the probability of initial attendance (Hyslop and Kershaw, 1981;Wanberg and Jones, 1973). Fleming and Lewis (1987) reported that 40% of applicants at an out-patient alcohol clinic did not attend when a treatment place became available, with a waiting time of more than 2-weeks increasing non-attendance.

Studies which have reduced the length of the waiting period have often been successful in increasing attendance rates. Dennis et al (1994) reported an increase in the number of patients who kept intake appointments in a methadone programme when the waiting period was reduced from 40 days to 14 days. Maddux et al (1995) found a marked decrease in pre-treatment attrition when methadone prescribing was started within 24-hours of the initial contact with a treatment service compared to the standard 14-days waiting period, with 4% of the rapid admission and 26% of the slow admission group failing to attend the initial appointment.

A number of explanations for the relationship between attendance and waiting times have been suggested. Claus and Kindleberger (2002) and Redko et al (2006) suggested that the crisis that precipitated agency contact may have subsided with increasing time between initial contact and treatment entry, resulting in substance users feeling less need for treatment. Festinger et al (1995) and Woody et al (1975) suggested that a patient may have only temporarily overcome internal or external barriers to treatment when they first present and the forces to pursue treatment may be quite fragile and time limited.

The relationship between the length of waiting time and non-initiation of treatment has not been universally detected. Several studies in the UK have failed to demonstrate a relationship between the two variables. Donmall et al's (2005) study of fifteen drug treatment agencies found the length of wait between initial referral to the treatment services and assessment did not have a significant effect on treatment entry. Georgakis (1999) examined 2000 consecutive admissions to a residential detoxification centre between 1983 and 1998 and also found no evidence to suggest that people with longer waiting times prior to entry were less likely to take up the offer of treatment.

### 1.5.3 Treatment retention

Stark (1992) stated that "premature termination is one of the greatest problems interfering with the effectiveness of substance abuse treatment". Retention studies typically report high rates of attrition from substance abuse treatment (Joe et al, 1998, De Leon et al, 2000b), with drop-out often occurring within the first few weeks or months of treatment (Stevens et al, 2008; Miller, 1985). Although it is difficult to

summarise drop-out rates as services and researchers define drop-out in different ways, and treatment is based on divergent treatment approaches, studies of drug abuse treatment have reported drop-out rates of between 24% and 83% (Gossop et al, 1999; Simpson, 1981), and rates of between 18% and 83% for alcohol treatments (Silberfeld and Glaser, 1987; Gordis et al, 1981).

Research on the relationship between waiting times and treatment retention is not extensive and the studies which do exist have not been consistent in their findings (Claus and Kindleberger, 2002; Georgakis, 1999; Addenbrooke and Rathod, 1990). A number of studies have demonstrated a relationship between shorter waiting times and longer treatment tenures. Rees et al (1984) found patients at an alcohol treatment unit who made 5 or more clinic visits had waited a shorter time (average of 47 days) for their first appointment than those who made fewer visits (average of 61 days). An early study by Woody et al (1975) compared drug treatment tenures among patients where medication was provided 1-3 days after initial assessment or on the same day. Decreasing delays at intake significantly increased the retention rate. A greater number of patients entering treatment in the rapid-intake group were retained at each monthly follow-up for 5 months compared to the longer-intake group. Bell et al (1994) investigated the effects of assessment and intake procedures on patients' performance in methadone maintenance treatment in Australia where 89 patients were admitted via a rapid-intake procedure (same or second day receipt of methadone) and 74 patients who were admitted at a slower rate (first dose 5-8 weeks after applying). Patients who underwent prolonged assessment were twice as likely as the rapid-intake group to be discharged during the first 400 days of treatment and were five times more likely to drop-out without discussion with staff and were notably more likely to use heroin during treatment.

High attrition continues to be an important issue for substance abuse treatment programmes. A longer stay in treatment is among the few consistent predictors of better post-treatment outcomes (Hubbard et al, 2003; Gossop et al, 2001). A number of studies have found that individuals who complete treatment are more likely to abstain from alcohol and other drug use and have lower relapse rates and fewer arrests than those who drop-out before completing treatment (Stark, 1992; Simpson, 1981). Dropping out of treatment also constitutes a major expense for treatment services who

have already invested staff time and resources to starting each individual course of treatment (Stark, 1992; Deyo and Inui, 1980).

The assumption that an immediate response to substance abusers' requests for help increases the likelihood of retention is not always supported. A number of studies have demonstrated that substance users entering treatment after a short delay do not necessarily persist with treatment. Addenbrooke and Rathod (1990) studied 130 patients at a drug service and found no difference in treatment tenures between those seen within seven days of referral or those who had a longer waiting period (mean of 39 days). Similarly, studies by Best et al (2002) and Donmall et al (2005) found no relationship between patient waiting times prior to treatment entry and retention in treatment three and six months after entry.

### 1.5.4 Behaviour during the waiting period

The literature on the behaviours and functioning of substance users placed on a treatment waiting list is limited (Yancovitz et al, 1991; Brown et al, 1989). Several studies have shown that a sizeable number of substance users placed on a waiting list start making changes in their substance use prior to treatment entry (Redko et al, 2006; Moore and Budney, 2002). Tucker (1995) found that nearly 86% of patients awaiting entry to alcohol treatment achieved abstinence before intake. Rosengren et al (2000) reported that 45% of participants claimed to have stopped substance use, or were maintaining abstinence, during an average of twelve days waiting period prior to in-patient drug and alcohol treatment. In this study the length of time on the waiting list was an important contributor to maintenance of sobriety prior to treatment entry. The longer the person had to wait, the more difficult sobriety became. A total of 67.7% of the patients could maintain abstinence during waits of one week compared to only 24.9% of those waiting for 18-days or more.

Brown et al (1989) studied 29 waiting list participants who had requested treatment at a residential unit in Baltimore for cocaine abuse. Interviews with participants during the waiting period found nearly half of all subjects (48.3%) reported some decrease in the use of their primary drug subsequent to their registering for treatment. A third also reported consuming less alcohol at the time of the interview than they were at time of

application for treatment. Two-thirds of intravenous drug users reported having made changes in their behaviours designed to reduce the risk of contracting AIDS and a similar proportion reported having sought HIV testing. Being on the waiting list a shorter (3 months or less) or longer (4-6 months) time was not associated with a greater or lesser tendency to modify drug-using behaviours, with no difference in the reported reductions of drug use among patients with different waiting times prior to entering treatment.

Contradictory evidence has been reported by Urschel et al (1991) who found no evidence that the drug and alcohol use, or other health problems, of patients awaiting treatment entry for cocaine abuse treatment in Philadelphia showed any improvement without treatment. Within this study the majority of untreated waiting list patients showed significant increases in the severity of their medical, psychiatric, social and drug abuse problems over the 4-week waiting period. Forty-eight per cent of the waiting list participants reported increases in the severity of drug and alcohol problems, 56% reported increased severity of medical problems, 80% reported increased employment and support problems and 48% had a greater number of problems in psychiatric, family or social adjustment. Less than 60% of the patients who were contacted and told they would be eligible for treatment at the end of the 4-week waiting period actually accepted treatment.

Brown et al (1989) demonstrated that waiting for long periods without receiving some form of treatment was associated with an increase in criminal justice involvement and decreased interest in entering treatment. Four of the 13 individuals on the waiting list for 4 or more months reported being arrested, whereas none of the 16 subjects on the waiting list for 3-months or less reported an arrest. Seven of the 13 subjects waiting 4 or more months appeared in court during that period, while only 1 of 16 subjects on the 3-month waiting list. Six of the 7 individuals who could not be interviewed due to incarceration had been on the waiting list 4-months or more.

Adamson and Sellman's (1998) study of 64 patients awaiting entry to a methadone treatment programme in New Zealand found the mean cost of drugs used in the preceding 7 days was $882 across all subjects. The mean financial gain from criminal sources over the same period was $1079 and was derived from drug-related crime,

property crime and prostitution. An important implication of these findings is that untreated opioid users are a substantial financial burden to the community in terms of offending and the costs associated with prosecuting the offences. In contrast, removing drug users from waiting lists and into interim methadone treatment (without counselling) in the US resulted in reduced criminal behaviour (Schwartz et al, 2006) and reduced criminal justice costs (Koenig et al, 2005; Zarkin et al, 2005).

Interviews with 52 substance users awaiting entry to either residential or outpatient substance abuse services found delayed treatment entry was affected by other barriers to treatment entry which occurred with the passage of time (Redko et al, 2006). During the waiting period some substance users found jobs that interfered with treatment entry, while others moved away to avoid homelessness or their drug-using social environment. Some substance users achieved abstinence during the waiting period and saw this as a sign that they did not need treatment and therefore had less interest to enter treatment, while many others relapsed to drug use. The substance users' subjective experiences of the passage of time also made waiting particularly difficult, with some describing even short waiting periods as "never ending" or "eternal".

The findings of the small number of studies which have examined the behaviour of waiting list participants are consistent on several points. First, the behaviour of users awaiting treatment entry does not always remain at the level observed when the person first applied for treatment. While some use the time to make changes to their substance use, others continue to experience difficulties in functioning or a worsening in their overall substance use. Waiting for treatment has been associated with poor levels of treatment engagement, patient dissatisfaction, and continued physical, social and personal costs (Adamson and Sellman, 1998; Wenger and Rosenbaum, 1994) in a number of studies. These costs include physical health risks associated with maintaining a substance use habit such as the risk of overdose and the spread of viruses, homelessness, crime, incarceration, and the breakdown of families. Untreated substance users take up a variety of government interventions and services, including hospitalisation and incarceration (Zealberg and Brady, 1999). Many of the studies reviewed highlight the importance of taking advantage of applicants' initial enthusiasm for treatment. For some there appears to be a short 'window of opportunity' for substance abuse treatment and if this opportunity is not taken, there is no guarantee that

services will be accepted when they are offered (Brown et al, 2002). The National Institute of Drug Abuse's Principles of Drug Addiction Treatment (NIDA, 1999) states "potential treatment applicants can be lost if treatment is not immediately available or readily accessible". While many substance users are ambivalent about seeking treatment (Kaplan and Johri, 2000) and have little tolerance for waiting, other substance users will be affected by various unintended consequences of waiting time which have been shown to be deleterious for treatment entry such as arrest or homelessness (Redko et al, 2006; Brown et al, 1989).

It may also be the case that the longer that people have to wait for treatment, the less effective that treatment will be. Miller (1985) reported that patients receiving treatment after a 10-week wait, improved less than patients who received the same treatment without having to wait for it. Bell et al (1994) found patients admitted to treatment after a prolonged intake procedure lasting 5-8 weeks were more likely to be discharged for persistent non-compliance in methadone maintenance treatment compared to patients who entered after a rapid assessment procedure with receipt of methadone the same or following day.

The research literature presented in the previous section drew attention to some of the consequences of delaying access to substance users who request treatment. While substance users wait for treatment their condition remains unaddressed and the likelihood of them entering treatment or remaining in treatment declines. The factors that may mediate the relationship between waiting times and treatment entry have been largely overlooked by researchers. It has been suggested that asking substance users to wait before treatment may diminish motivation (Stevens et al, 2008; Schwartz et al, 2006) and lead to less interest in entering treatment and making changes to substance use behaviours. No studies, known to the author, have examined the motivation of substance users awaiting treatment entry or how this is related to key treatment events such as treatment initiation and clinical variables such as substance use during this period. The research programme presented will address this gap in the research literature and draw attention to some of the issues surrounding the motivation of heroin users awaiting treatment entry and the clinical relevance of this information in the treatment of drug abuse. This thesis proposes that the relationship between outcomes (e.g. treatment entry) and the amount of time spent waiting for treatment is mediated by

the substance users' motivation for change. The existence of this relationship will be examined through two studies in the research programme.

## 1.6 THE ROLE OF MOTIVATION IN SUBSTANCE ABUSE TREATMENT

This section will present a brief review of the history of motivation within the context of substance abuse treatment, with an emphasis on the relationships between patient motivation, treatment factors and treatment outcomes. The second part of this section will address some of the possible effects of waiting list participation on patient motivation and will conclude with the presentation of the conceptual framework for the research programme which will demonstrate how the waiting period and motivation may interact to influence treatment entry and substance use over the waiting period.

Motivation is considered to be an important first step towards any action or change in behaviour, and has long been regarded as an important factor in the treatment of addictive behaviours (Miller, 1985). There is a proliferation of terms used to define motivation and many different criteria for assessing motivation which has often led to conceptual confusion regarding the concept (Drieschner et al, 2004). This confusion was noted by Rosenbaum and Horowitz (1983) who stated that "definitions of motivation are sufficiently fuzzy so that almost any variable can be thought of as relevant". For the purposes of the research programme motivation will be defined as a hypothetical construct used to describe the internal or external forces producing the initiation, direction, intensity, and persistence of a behaviour (Vallerand and Thill, 1993).

Historically motivation was often viewed as a static trait or disposition that a patient either had or did not have. Low motivation was viewed as deriving from negative dispositions such as lack of will power or from ego-defence mechanisms such as denial. As one writer noted,

> "Notions of moral turpitude and incurability have been linked with problems of drug dependence for at least a century. Even now, public and professional attitudes toward alcoholism are an amalgam of contrasting, sometimes seemingly irreconcilable views: The alcoholic is both sick and morally weak.

> The attitudes toward those who are dependent on opiates are a similar amalgam, with the element of moral defect in somewhat greater proportion (Jaffee, 1979).

It was generally assumed that the patient was the most active force in treatment and unfavourable treatment outcomes were frequently attributed to low motivation for change (Drieschner et al, 2004; Nir and Cutler, 1978; Orford and Hawker, 1974). This conceptualisation of motivation has been criticised because it led to self-fulfilling prophecies in which patients felt they were destined to fail and also discouraged interventions by the treatment providers to enhance motivation (Miller, 1985).

Over the last few decades there has been a shift in the addiction field's understanding of personal change. The revised perspective has moved the focus away from the patient's level of motivation and towards the effects of factors in the environment which may influence the individual's ability to benefit from treatment. This new conceptualisation focuses on the multidimensional nature of change and highlights the interactions between the individual and the treatment provider in shaping motivation to encourage and maintain positive behavioural change (Miller and Sanchez, 1994). There has been substantial interest in understanding the determinants and mechanisms of change within the treatment environment which may have a positive influence on patient motivation and which in turn may influence treatment outcomes. This interest has been reflected in the array of research trials which have included motivation components in their set of measures (Project Match Research Group, 1997, Simpson and Joe, 1993).

### 1.6.1 Motivation and treatment outcomes

A number of studies have shown motivation to be a critical dimension influencing whether substance users seek, enter and participate in treatment (Corsi et al, 2007; Weisner et al, 2001; DiClemente, 1999; Broome et al, 1999; DiClemente and Scott, 1997). Pre-treatment motivation has also been found to be a prominent factor in predicting treatment outcomes. Positive relationships between motivation and patient outcomes have been demonstrated across different types of therapeutic settings including methadone maintenance programmes (Simpson et al, 1997a) residential rehabilitation and drug-free programmes (Joe et al, 1998) along with drug in-patient (Gossop, 1978) and alcohol out-patient treatment programmes (Cox and Klinger, 1988;

Prochaska et al, 1992). These outcomes have included successful engagement in treatment, as measured by session attendance, reductions in substance use and treatment retention (Simpson et al, 1997a; De Leon et al, 1994; Simpson and Joe, 1993). The relationship between motivation and treatment outcomes has at times been inconsistent (Claus and Kindleberger, 2002). A number of studies have found higher motivation at treatment entry to be unrelated to either participation in treatment or superior outcomes (Rapp et al, 1998; De Leon et al, 1994). The apparently inconsistent findings may be the result of differences in how motivation has been defined and measured and the examination of the construct in different populations of substance users (Ryan et al, 1995).

Numerous studies have investigated the factors in the treatment environment which may mediate the relationship between a patient's initial motivation for change and his or her treatment outcomes. The role of the therapeutic relationship has received a considerable amount of empirical investigation. The therapeutic relationship, also called the helping alliance, refers to the relationship between a healthcare professional and a patient established during the treatment process and is expressed in, and influenced by, the way patients and clinicians communicate. The importance of the therapeutic relationship in treatment was highlighted from the results of early studies of alcohol treatments which found dramatic differences in the rates of patient drop-out and treatment completion among counsellors in the same programme who were using the same counselling techniques (e.g. Rosenberg and Raynes, 1973; Raynes and Patch, 1971).

Research has demonstrated that the quality of the relationship between therapist and patient is a consistent predictor of treatment engagement (Fiorentine et al, 1999; Connors et al, 1997; Simpson et al, 1997b), treatment retention (Fenton et al, 2001; Barber et al, 1999), and early improvements in treatment (Simpson et al, 1997b). A small number of studies also found the therapeutic alliance to be related to post-treatment drug use outcomes in out-patient studies (Joe et al, 200; Hser et al, 1999), although a review by Meier et al (2005) found that this relationship is not always consistent. A strong therapeutic relationship is believed to be at the base of effective treatment because it promotes the patient's belief that treatment can help, assists the patient change their views on drug use and lifestyle and supports their progress with behavioural change (Hser, 1995).

Predictors for the early therapeutic relationship have been found to be related to motivation (Connors et al, 2000; Joe et al, 1998). Studies have found that patients with greater motivation at the start of treatment are more likely to have a good patient-counsellor rapport (Joe et al, 1998) and greater reductions in substance use (DiClemente, 2007; Simpson et al, 1997b) compared to those with lower motivation. Miller and Rollnick (2002) stated that "motivation for change can not only be influenced by, but in a very real sense arise from interpersonal context".

Other factors in the treatment environment have also been found to play a prominent role in influencing patient treatment outcomes. For example, numerous studies have demonstrated that methadone dose prescribed during treatment has a negative linear effect with heroin use and a positive linear effect with treatment retention (Gossop et al, 2001; Joe et al, 1994; Ward et al, 1994). Strain et al (1999) found a significantly lower rate of opiate-positive urine specimens among patients receiving high-dose methadone compared to low-dose methadone, while Kamal et al (2007) found lower doses of methadone during treatment were associated with lower rates of opiate abstinence. The number of ancillary services (e.g. other medical, legal, employment services) received by patients during treatment has been found to related to improvements in treatment effectiveness (Simpson et al, 1995; Ball and Ross, 1991). McLellan et al (1994) found that patients who received a broader array and increased frequency of services for their alcohol, cocaine and opiate use stayed in treatment longer, and showed fifteen per cent better outcomes than patients who did not.

The way in which these treatment factors interact with, or influence, patient motivation for change has received little research attention. However, several studies have suggested that a patient's perception and appraisal of the treatment environment may be related to motivation which in turn may influence treatment outcomes. Gossop et al (2003), for example, found higher levels of motivation were related to programme perceptions, and that programme perceptions were predictive of improved heroin use outcomes at 1-month and 6-month follow-ups in methadone maintenance programmes. Fiorentine et al (1999) also found the perceptions of the utility of treatment and ancillary services were related to treatment engagement, although the extent to which these appraisals were related to motivation for change was not examined. Specific treatment factors, such as optimal methadone doses to control cravings and manage

withdrawal symptoms or ancillary services to assist in other problem areas may promote confidence in the patient that treatment can help with their problems (De Leon et al, 1994: Jordan and Oei, 1989) and this confidence may increase motivation for change.

### 1.6.2 Patient factors and treatment outcome

A number of patient characteristics have also been found to constitute an important explanation for treatment effectiveness. Patient characteristics considered to be positively related to treatment outcome include a history of previous substance abuse treatment (Adamson et al, 2008), being employed (Platt, 1995; McLellan et al, 1994; Anglin and Hser, 1990; Hubbard et al, 1989), and the availability of environmental resources such as social support (McLellan et al, 1980). Socio-economic status has also been previously associated with retention in treatment, while small and varied effects have been noted with demographic variables such as relationship status (Stark, 1992). Demographic characteristics such as age, race, gender or education do not seem to be related to outcomes regardless of the outcome criteria evaluated (McLellan et al, 1994).

Factors associated with less favourable outcomes such as treatment drop-out and relapse following treatment include having a more extensive criminal history (De Leon,1984; Simpson, 1981), a greater severity of drug dependence (Rounds-Bryant et al, 1999; George et al, 1999; McLellan et al, 1994; Anglin and Hser, 1990), stressful life events (Finney and Moos, 1984) and more severe psychiatric symptoms and disorders at intake (Gossop et al, 2001; McLellan et al, 1996; Carroll et al, 1993), although these results may be specific to the programmes being evaluated and the type of patients they serve (Stark, 1992).

### 1.6.3 Treatment process models

A number of investigators have proposed treatment process models to account for the relationship between motivation and other patient factors, the treatment process and treatment outcomes. Joe et al (1994), for example, proposed a treatment process model for the Drug Abuse Treatment Outcome Studies (DATOS) to explain the factors associated with treatment retention. Their process model is essentially a classification of variables involved in the process of substance abuse treatment including patient

characteristics at admission (e.g. legal pressure, psychological functioning, drug use), treatment programme characteristics such as session attributes (frequency of counselling session attendance, topics discussed in counselling) and therapeutic involvement (rapport, patient confidence that treatment is effective), treatment events and treatment readiness. Another model by the same research team (Simpson et al, 2001) attempts to depict what actually happens during the different stages of treatment from treatment entry to post-treatment care and how these are related to individual factors and factors in the treatment environment. The model was developed on studies of methadone maintenance involving nearly 3,000 patients in 120 different treatment programmes but was found to account for only for a small variance in treatment retention, indicating that other factors were more important in explaining outcomes than those included in the model. These results show the complexities of examining the relationships between motivation, treatment factors and outcomes. Numerous factors are believed to impinge upon these relationships, many of which still remain to be identified.

## 1.7 MOTIVATION AND WAITING TIME

While a considerable amount of research has been devoted to treatment process components in understanding the relationship between motivation for change and treatment outcomes, this has focused predominantly on substance users already engaged in treatment (Gossop et al, 2007; Cahill et al, 2003; Simpson and Joe, 1993). Motivation has not been systematically examined among substance users placed on a waiting list prior to treatment entry. Waiting list participants may not be comparable to treatment samples in that they have expressed a desire for treatment but are still exposed to the lifestyle and harms associated with on-going substance use. Examination of the motivation among this group of substance users may contribute to a greater understanding of the short-term effects of being placed on a waiting list such as the likelihood of treatment entry and patterns of substance use during this period.

The waiting period is one of the first experiences of the treatment process that many substance users will encounter and as such may be a critical stage for shaping the nature of the future relationship between the treatment seeker and the treatment service. A number of investigators have reported that when substance users request treatment they

often desire an immediate response to their problems (Gariti et al, 1995; Ewalt et al, 1972). Although the limited available research is primarily suggestive, it has been hypothesised that the inability of a treatment service to meet an individual's immediate needs, by imposing an unexpected or lengthy waiting period, may result in lessened confidence in the system to provide the support they require and may diminish motivation about changing substance use or entering treatment (Stevens et al, 2008; Schwartz et al, 2006). In support of this proposition, Broome et al (1999) found patient confidence was higher in out-patient drug-free and out-patient methadone treatment when referred services were more readily accessible. An earlier study by Brown et al (1989) reported that waiting list participants with varying lengths of delay prior to scheduled treatment entry reported a considerable reduction in their interest in receiving treatment while waiting for a place to become available. Fiorentine et al (1999) reported that the perceived utility of treatment is among one of the strongest predictors of treatment engagement and that patients will engage in treatment when they believe treatment will address their problems and that they are helpful and worthwhile. Having a waiting list is perceived evidence that treatment cannot address their problems at a time when they feel most in need of assistance.

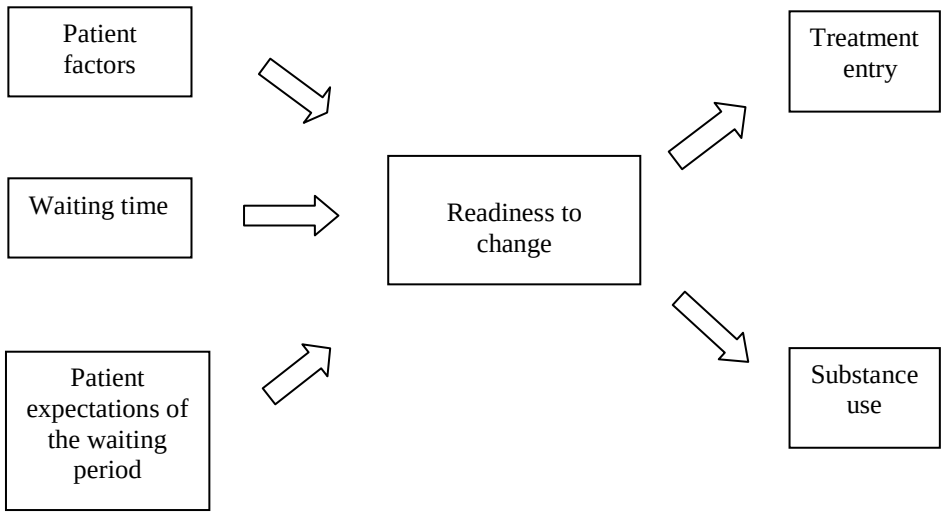
### 1.7.1 Conceptual framework for the research programme

Previous models and frameworks depicting the relationship between patient motivation, the treatment environment and outcomes have failed to take into account the waiting period prior to treatment entry. There has been an absence of research examining the changes in motivation during this period, or how these changing patterns are influenced by the length of the waiting period or related to outcomes such as starting treatment or making changes to substance use during the waiting period. The thesis hypothesises that the relationship between waiting times and outcomes is mediated by motivation to change drug use. That is to say, the length of the waiting period influences motivation to change drug use which in turn affects the short-term outcomes of successful treatment entry and patterns of substance use over the waiting period, thus creating the relationship between waiting times, treatment entry and outcomes.

Figure 1.1 depicts the hypothesised directional relationships between the factors believed to be associated with treatment entry and substance use during the waiting

period. The framework considers both the patient-level (background factors, expectations and readiness to change) and treatment level (waiting time) influences on the outcomes examined. The central focus of the conceptual framework is the effects of the length of the waiting period on readiness to change, and the effects of readiness to change on treatment entry and levels of substance use over the waiting period. Although patient factors are not of central interest, previous research has shown that certain patient characteristics are associated with both treatment entry and motivation to change. These factors will be used to examine predictors of changes in readiness over the waiting period and predictors of treatment entry at the end of the waiting period. The framework also includes the relationship between patient expectations of the length of the waiting period and readiness over the waiting period and the association of these expectations on the likelihood of treatment entry.

Figure 1.1: Conceptual framework of the proposed relationships between waiting time, patient factors and readiness to change




Waiting time refers to the total number of days between the initial clinic visit requesting treatment and scheduled treatment entry. It is acknowledged that the waiting period may also have an influence on longer-term treatment outcomes, although this is beyond the scope of this research programme. For example, there have been a number of studies

which have shown a relationship between waiting times and time in treatment, although such a relationship has not been consistently found as discussed in the earlier Literature Review (Donmall et al, 2005; Bell et al, 1994; Rees et al, 1984).

Readiness to change refers to the intrinsic (i.e. originating from within) motivation of the patient. It is a concept utilised by the Transtheoretical Model of Motivation (Prochaska and DiClemente, 1982) and indicates a willingness or openness to adopt a particular behaviour. For the purposes of the research programme readiness to change will represent a willingness to change heroin use. Readiness to change and the Transtheroretical Model of Motivation will be examined in greater detail in Chapter 2.

The patient characteristics within the framework include age, physical and psychological health status, frequency of substance use, severity of dependence for heroin use and intravenous heroin use. A number of these factors have been identified in previous studies as being related to both treatment entry and levels of motivation. (e.g. Austin et al, 2010; Zule and Desmond, 2000; Hser et al, 1998; Allen, 1994) . It is acknowledged that may other patient factors may interact with treatment entry and readiness to change though these are beyond the scope of this research programme.

Another element within the conceptual framework represents patient expectations. This factor is depicted as being associated with readiness to change drug use and treatment entry. Although there is limited research on patient expectations within the context of substance abuse treatment, it has been suggested that the expectations which substance users bring with them to the health-care encounter and their subsequent perceptions of how these expectations are met may be associated with attrition from the waiting list (Meichenbaum and Turk, 1987). It is hypothesised that this relationship may be mediated by motivation.

It is assumed that substance users approach services with different expectations of what the treatment process will entail. This may include expectations about the length and intensity of treatment, the appropriateness of the treatment service, and the ability and efficiency of the service to address their needs. A small number of studies in the field of medical treatment have demonstrated that patients also hold expectations about the length of time they are expected to wait prior to receiving treatment. Thompson and

Yarnold (1995) measured the expectations of waiting times to see a doctor among 1,574 patients in a community hospital in the US. The survey found that when waiting times were longer than expected patients were least satisfied, and when actual waiting times were shorter than expected they were more satisfied with the quality of care. These results are consistent with the Disconfirmation Paradigm (Churchill and Suprenant, 1982). This states that when there is a gap between performance and expectations, then disconfirmation results. According to this paradigm, customer satisfaction is determined by the magnitude and direction of the gap between expectations and perceptions of performance. Within the field of substance abuse Grant (1997) and Pfeiffer et al (1991) found that a lack of confidence in the treatment system, and consequently of an expectation that treatment could not help, were significant barriers to treatment entry. However, these studies did not assess whether these expectations were predictive of treatment entry. It is hypothesised within the research programme that patient expectations regarding the length of the waiting period will be negatively associated with readiness to change and treatment entry. That is to say, a discrepancy between the actual and expected waiting times (i.e. when waiting times are longer than expected) will result in reduced levels of readiness to change and lower rates of treatment entry relative to waiting list participants whose actual waiting times are similar to, or less than, their expected waiting times.

Study 1 of this research programme examines the usefulness of a model of motivation - the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller and Tonigan, 1996) - in assessing heroin users' readiness to change their heroin use at separate time points during a new episode of outpatient drug treatment. If the measure is able to detect changes in readiness over time, it will then be used as the measure of readiness to change in Study 2 which will examine the relationships between the different elements in the conceptual framework.

The conceptual framework will be tested in three stages. First, the relationship between the length of the waiting period and readiness to change drug use will be examined. The influences of patient factors (e.g. levels of substance use) on the changes in readiness will be also examined. The second stage of testing will address the relationships between the two primary variables and outcomes. This will include an examination of the association between the length of the waiting period and treatment entry and the

association between readiness to change and treatment entry. The impact of patient and substance use variables on the latter relationship will also be examined. Changes in substance use over the waiting period will be examined as a function of the duration of the waiting period and as a function of readiness to change. The third stage of the testing will examine how patient expectations of the length of the waiting period are related to readiness and subsequent treatment entry.

Behaviour has been conceptualised as a process mediated by several interacting factors. Exploring how two specific factors - waiting times and readiness to change - are linked, and how these factors influence patient behaviours over the waiting period may assist in furthering our understanding of elements of the treatment process which in turn may promote motivation and behavioural changes among substance users

## 1.8 OVERVIEW OF THE THESIS

The following overview describes the different chapters and the contribution they make towards the overall thesis objectives.

Chapter 2 provides a methodological overview relating to the current research programme. This details the research questions to be addressed, the underlying theoretical approach employed and some of the broader methodological issues arising from the studies.

Chapter 3 presents a Pilot Study which examines whether the chosen measure of motivation can detect changes in a small sample of drug users over a six-month treatment period. The results of this study will inform the choice of motivation measure to be used in Study 2.

Chapter 4 presents the findings of the main waiting list study. It will examine the relationship between the waiting period and motivation by randomly allocating treatment seekers to a short or more prolonged waiting period prior to treatment entry. Changes in motivation will be tracked over the course of the waiting period and the relationship between these changes and the likelihood of treatment entry and patterns in

substance use will be examined. The design will also allow an examination of the treatment seekers who failed to enter treatment after the waiting period.

Chapter 5 presents a general discussion of the findings from the research programme. The limitations and implications of the findings are described and conclusions drawn regarding their utility for clinical practice and further research in the area.

# CHAPTER 2: METHODOLOGY

## 2.1 INTRODUCTION

Chapter 1 introduced the area of research for this thesis through an examination of the published literature relating to treatment waiting times and motivation. The second chapter outlines the research objectives and questions which will be addressed within the thesis and will provide an overview of the theoretical approaches employed within the two studies. Methodological issues which relate to both studies will be discussed drawing on examples from the literature.

The issues considered within the next five sections include:

(1) study aims and objectives
(2) study design
(3) study sample and setting
(4) measures used and measurement issues
(5) overview of data management and statistical procedures

## 2.2 STUDY AIMS AND OBJECTIVES

This section will introduce the research questions to be explored within the thesis. Decisions regarding the research programme were aimed at incorporating the principles of good research design to address the key research questions, while remaining practically feasible within the available financial and time constraints of the research programme. The challenges of recruiting drug users and conducting longitudinal research while working within the context of a busy clinical setting can pose both practical and ethical problems. While many of these problems are not insurmountable, they need to be carefully and thoughtfully considered while undertaking outcome research.

This research programme starts from the premise that motivation to change substance use behaviours may be affected by the length of time heroin users are required to wait for treatment, and that longer waiting periods may be associated with reductions in

motivation, which in turn may impact on treatment entry and patterns of substance use over the waiting period.

As the relationship between waiting times and patient motivation has not been previously examined, the research programme will attempt to address some of the gaps in the existing knowledge base and redress some of the limitations of previous research relating to the impact of treatment waiting times. The first study will pilot the research instruments to be used in Study 2. The second study will use a randomised design to examine the research objectives set out below.

The research programme is based around the following four objectives.

**Objective 1: To examine the relationship between waiting times and readiness to change heroin use.**

Objective 1 examines how readiness to change alters over the course of the waiting period among a sample of heroin users randomly allocated to two treatment-entry conditions which represent short and more prolonged waiting periods. The demographic and clinical characteristics which differentiate heroin users who report changes in their readiness over the waiting period from those who do not will be also examined.

*Hypothesis 1: Heroin users with longer waiting times prior to the start of treatment will demonstrate greater reductions in readiness to change than those with shorter waiting times.*

*Hypothesis 2: Waiting times will be more strongly associated with changes in readiness scores over the waiting period than baseline demographic or clinical characteristics.*

**Objective 2: To examine the relationships between readiness to change, waiting times and successful treatment entry.**

Objective 2 will examine whether the length of the waiting period prior to scheduled treatment entry and/or readiness levels are related to the likelihood of treatment entry once a treatment place becomes available.

*Hypothesis 3: Longer waiting times will be associated with lower rates of treatment entry.*

*Hypothesis 4: Readiness to change will be a stronger predictor of treatment entry status than demographic or substance use variables.*

**Objective 3: To examine the relationships between waiting times, readiness to change and substance use.**

Objective 3 will examine how substance use behaviours (e.g. frequency of heroin use) change over the waiting period and whether this change is related to the length of the waiting period and/or to the readiness levels of the waiting list participants.

*Hypothesis 5: Longer waiting times will be associated with fewer reductions in substance use over the waiting period compared to shorter waiting times.*

*Hypothesis 6: Increases in readiness scores over the waiting period will be associated with reductions in heroin use over the same period.*

*Hypothesis 7: Reductions in the frequency of heroin use over the waiting period will be associated with high baseline readiness scores.*

**Objective 4: To examine the relationship between waiting time expectations, readiness to change and treatment entry.**

Objective 4 will examine the discrepancy between the expected length of the waiting period and the actual length of the waiting period. The relationships between this discrepancy in waiting times and the likelihood of treatment entry will be examined along with the impact of this discrepancy on readiness levels over the waiting period.

*Hypothesis 8: Heroin users' expectations about the length of the waiting period will be associated with the likelihood of treatment entry.*

*Hypothesis 9: Heroin users' expectations about the length of the waiting period will be associated with changes in readiness scores over this period.*

## 2.3 RESEARCH DESIGN

The following section will detail the types of research design used within each study to address the objectives of the research programme.

### 2.3.1 Longitudinal cohort design

Both studies in the research programme utilised longitudinal cohort designs to collect data on the variables under investigation. The longitudinal cohort design involves the study of the same group of individuals over an extended period of time (Powers and Knapp, 1995). Typically information is collected at the onset of the study and the same information is collected repeatedly throughout the length of the study. The two primary purposes of this type of research are to describe patterns of change and to describe the direction and magnitude of causal relationships between the variables (Menard, 1991). The longitudinal design has been used in many large-scale drug abuse outcome studies including the Drug Abuse Treatment Outcome Study (DATOS; Simpson et al, 2002), and the National Treatment Outcome Research Study (NTORS; Gossop et al, 2001) to report changes in substance use, offending behaviour and health variables as a result of engagement in different treatment programmes in the UK and US. Longitudinal studies in the field of alcohol use have examined factors such as the consequences of alcohol consumption (Cowan et al, 1985) and the prospective evaluation of preventative activities (Spooner and Hall, 2002). The major advantage of longitudinal research methods is that they enable researchers to study individuals over a period of time which may provide valuable information on the behaviours under investigation. Researchers can assess differences between reports of attitudes or behaviours at two or more time points by calculating differences between those reports which may allow the researcher to identify the antecedent events that lead to given outcome(s).

Participant attrition and financial costs are the biggest challenges associated with longitudinal research. Researchers have to maintain contact with, and commitment to, the participants in the study which can be costly in terms of time, research staff and

money. At each subsequent wave of questioning some participants may drop-out of the study leaving a smaller sample of people to provide usable information at each data collection point. Incomplete data can compromise the internal and external validity of the results as those who remain in the study may be systematically different to those who leave on the variables under investigation (Cook and Campbell, 1979). Some investigators have attempted to minimise the problems of successfully locating and assessing participants at follow-up assessments by implementing tracking techniques (Ribisl et al, 1996; Twitchell, et al, 1992) or predicting contact difficulty on the basis of individual characteristics such as age, ethnicity and substance use variables (Bale et al, 1984; Sobell et al, 1984).

### 2.3.2 Within-subjects design

Study 1 is a pilot study which used a within-subjects longitudinal design to examine whether the chosen measure of motivation for the research programme was able to detect changes in readiness over time among a sample of heroin users at the start of a new treatment episode. Readiness to change data was collected at three time points over a six-month period. The changes in readiness of each patient between these data collection points are examined.

These objectives were achieved by utilising a within-subjects (or repeated measures) longitudinal design. The within-subjects design makes repeated observations of a single group at different points in time, allowing a comparison of changes in these participants over time. By using the same participants at each assessment point smaller samples can be used to test the hypotheses under investigation. Also, individual differences between participants, such as socio-demographic characteristics and clinical variables, are controlled for as they are the same at each assessment point, with each participant acting as their own control. A disadvantage associated with the use of within-subjects designs include practice effects where participants improve through the repeated administration of tests (Forsberg and Goldman, 1987), however, this is more relevant to designs assessing performance such as neuropsychological functioning.

### 2.3.3 Mixed-groups longitudinal design

A mixed-groups design combines the features of the within-subjects and between-subjects design. Subjects are split into two distinct groups which represents the between subjects factor and their behaviour is examined over time at different phases of the study, representing the within-subjects factor. The changes which occur are compared as function of group membership. Creswell (2009) described this type of design as a "useful and effective experimental platform to address more sophisticated types of research question". The main advantage of this type of design is that possible interaction effects between the two factors under investigation can be examined.

Study 2 assesses the relationship between waiting times and readiness to change by randomly assigning treatment seeking heroin users to one of two treatment-entry conditions (short or prolonged waiting period) prior to the start of treatment. A mixed-group design was used to examine the changes in readiness at two time points (within-subjects factor) among treatment seekers in the two treatment-entry groups (between-subjects factor). Changes in patient readiness and substance use over the waiting period and rates of treatment entry were compared as a function of treatment-entry group status.

### 2.3.4 Pilot Studies

A pilot study will be employed in Study 1 to examine the suitability of a measure of motivation in detecting changes in motivation over time in a clinical sample of heroin users. The term pilot study is used in two different ways in social science research. It can refer to feasibility studies, defined as "small scale versions, or trial runs, done in preparation for the major study" (Polit et al, 2001). A pilot study can also be used to pre-test or 'try out' a particular research instrument (Baker, 1994). The use of a pilot study in this thesis will involve pre-testing a research instrument to examine the suitability of the proposed instrument for examining the research objectives.

Pilot studies are frequently conducted before large-scale quantitative research. A pilot study is normally small in comparison with the main experiment and therefore can provide only limited information on the sources and magnitude of variation of response

measures. Pilot studies are usually carried out on members of the target population, but not on those who will form part of the final sample. This is because it may influence the later behaviour of research participants if they have already been involved in the research. Completing a pilot study successfully is not a guarantee of the large-scale study being successful. However, the main advantage of conducting a pilot study is to reveal potential deficiencies in the design of a proposed experiment or procedure and provide advance warning about where the main research project could fail. These deficiencies can then be addressed to avoid time and money being wasted on inadequately designed large-scale studies.

## 2. 4 STUDY SAMPLES AND SETTING

### 2.4.1 Selection of the study samples

In order to apply conclusions drawn from a study to the population the sample is designed to reflect, the representativeness of the sample must be ensured. The people selected to study must possess similar characteristics as those possessed by the larger population of interest. In controlled conditions, participants would be randomly chosen so that each person in the population would have an equal chance of selection. This way, the results can be reliably projected from the sample to the larger population. However, due to the time and resource constraints of many research studies this selection process is not always utilised.

The chosen samples for this research programme were two convenience samples of heroin users in contact with a single substance abuse treatment service.

> "Researchers often need to select a convenience sample or face the possibility that they will be unable to do the study. Although a sample randomly drawn from the population is more desirable, it usually is better to do a study with a convenience sample than to do no study at all, assuming, of course, that the sample suits the purpose of the study" (Gall et al, 1996).

The problems of the generalisability of the results to a wider population of heroin users will be discussed in Chapter 5.

Study 1 was conducted with a sample of heroin users who were starting a new treatment episode at the treatment service. Study 2 was conducted with a sample of heroin users requesting a new treatment episode at the point of first contact with the service. The study samples resided in the boroughs of Lambeth and Southwark in South London. Lambeth is the largest inner London borough with a resident population of 266,170 (Office for National Statistics, 2005). The borough has a young age-profile compared with the rest of the country (45% of the population is between the ages of 20 and 40 years). Southwark has a population of approximately 256,000 (ONS, 2005). The borough's population is also a relatively young one, with 53% of the population aged between 16-44 years. Both boroughs have an ethnically diverse population. Over 60% of the population is white and 25% are of black origin, with other groups making up the remaining 15%. In 2004 only 60% of the two boroughs' working-age population were employed, compared to 75% in Great Britain overall. Lambeth and Southwark have been described as boroughs with high levels of social deprivation and poor health (South London and Maudsley Mental Health NHS Trust, 2005).

### 2.4.2 Inclusion/exclusion criteria

The aim of the research programme was to examine the relationships between waiting times, readiness to change and a number of other patient factors. A number of inclusion/exclusion criteria were therefore employed to ensure that the samples recruited were appropriate to the research questions posed and would lend themselves to fulfilling the main objectives of the research programme. These criteria included:

(1) Contact with the drug treatment service. All participants had to be currently in contact with the selected treatment service (the stage of treatment differed within the two studies) for a heroin use problem.

(2) Treatment with the service required a classification of substance abuse as defined by the Diagnostic and Statistical Manual of Mental Disorders, fourth edition-TR (American Psychiatric Association, 2000).

> "A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-

month period: recurrent substance use resulting in a failure to fulfil major role obligations at work; school; home; substance use in situations where it was physically hazardous; recurrent substance-related legal problems."

(3) Satisfactory comprehension and communication. Study participants had to have the capacity to consent to study inclusion. Based on British Medical Association and The Law Society Assessment of Mental Capacity: Guidance for Doctors and Lawyers (2001), the participant needed to understand the facts of the study, to be able to weigh up the possible risks and benefits of participation, and to understand the nature and the requirements of their involvement in the study. South London has a diverse ethnic population, it was therefore necessary that each participant could understand the questions in the research interviews and communicate responses. As there was no designated funding for interpreter costs, including patients who could not speak English in the studies may have compromised the validity of any findings as there was no guarantee that the research questions would be understood. Heroin users displaying learning disabilities, neurological disorders or reported intoxication at assessment were also excluded since these factors may have an impact on the comprehension and completion of the research interview.

### 2.4.3 Research Setting

The setting for data collection was a substance abuse out-patient service in the Addictions Division of the South London and Maudsley NHS Trust. At the time of the studies the Trust provided mental health and substance abuse treatment services to people from Croydon, Lambeth, Southwark and Lewisham, and substance abuse services in Bexley, Greenwich and Bromley. The Trust also provides specialist substance abuse services to people from across the UK. The majority of substance users accessing the treatment service do so through self-referrals. Referrals are also received from G.P.s, hospital departments and other treatment services within the catchment area. Emergency cases and legal referrals (including Drug Treatment and Testing Orders) are generally dealt with by other specialist services within the area. The service deals primarily with substance users seeking treatment for opiate, stimulant or alcohol problems. The service is staffed by a multi-disciplinary team of psychiatric

nurses, drug counsellors, psychiatrists, psychologists, occupational therapists, pharmacists, administration staff and a Clinical Nurse Manager.

The treatment service used for data collection for the research programme was selected on the grounds of its locality and its capacity to recruit a sufficient numbers of heroin users to the study. The service has previously been used in a number of previous research studies and the staff and patients were accommodating to research on substance-abusing populations.

### 2.4.4 Treatment programmes

Two different treatment modalities for heroin abusers are delivered within the service. These include:

a) *Drug maintenance treatment* - These programmes use a long-acting synthetic opiate medication, usually methadone or buprenorphine, administered orally for a sustained period at a dosage sufficient to prevent opiate withdrawal, block the effects of illicit opiate use, and decrease opiate cravings. At the time of data collection only methadone was available within the service for maintenance treatments.

b) *Drug detoxification/reduction treatment* – Detoxification from opiates and other drugs refers to the process "by which the effects of opioid drugs are eliminated from dependent opioid users in a safe and effective manner, such that withdrawal symptoms are minimized" (National Institute for Health and Clinical Excellence, 2007). The process is conducted by administering decreasing doses of a substitute drug, alone or in conjunction with other medications, to reduce withdrawal symptoms. The dispensing of substitute medication usually takes place at community pharmacies. Methadone is the most widely prescribed drug within the clinic, although buprenorphine (Subutex) and lofexidine (Britlofex) are also prescribed. The outpatient programmes follow a Harm Reduction Model offering advice, information, counselling and support.

### 2.4.5 Clinic procedure

*Brief Assessment*: The treatment service operates an open-access assessment clinic which allows treatment seekers to present at the service without a scheduled appointment. The Brief Assessment Clinic operates on three afternoons a week. Its purpose is to increase the accessibility of the service to treatment seekers, to identify the individual's specific treatment needs and to allocate them to an appropriate service, either within the treatment service or elsewhere. At the initial presentation at the service drug users are briefly assessed by a psychiatric nurse or drugs counsellor (key-worker), to determine the nature of the problem and to provide information on the facilities available at the service.

*Treatment modality:* Allocation to the Methadone Maintenance Clinic (MMC) or Community Drug Team (CDT) is based on clinical grounds, on a case-by-case basis, from information collected at the Brief Assessment and, where applicable, information from the referrer. Clinic allocation is typically decided by the clinical team within several days of the Brief Assessment. Approximately 40% of the patients seeking treatment for opiate problems are allocated to the MMC and 60% to the CDT, though these proportions vary according to the clinical needs of the patients.

*Waiting lists*: The service operates two separate waiting lists for drug patients based on the geographical location of the referral. The service only accepts residents from two areas of South London - Southwark and Lambeth. The length of the waiting lists fluctuates according to the number of referrals received and current staffing levels. Each key-worker is allocated a maximum number of patients to their caseloads. When the service has its full complement of staff a higher number of treatment places are available than when there are fewer staff employed.

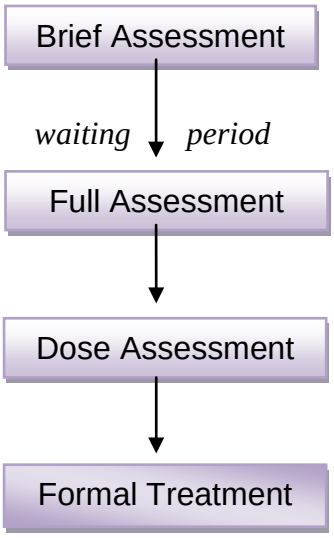
*Prioritisation:* A prioritisation system for waiting list placement is used within the service for patients judged, by the clinical team, to be at 'high risk'. A variety of clinical and social factors are taken into account when deciding on the need for quicker access to treatment, these include patients injecting in the groin or neck, pregnant drug users, sex industry workers, patients with a diagnosis of HIV and those recently released from prison.

*Full Assessment:* Once a treatment place becomes available a letter is sent to the patient inviting them for a Full Assessment. Full Assessment represents entry into treatment after the waiting period. This assessment consists of a more comprehensive examination of the problems to be addressed within treatment, personal circumstances and treatment goals. The assessment also provides information on the treatment process and the role of the patient during treatment.

*Dose Assessment:* Patients allocated to the CDT or MMC attend a Dose Assessment which typically occurs within a week of the Full Assessment appointment, depending upon the number of assessment slots available. The purpose of the assessment is to establish the patient on a suitable dose of medication to prevent opiate withdrawals and to reduce the need to take illicit opiates. Attendance at the clinic is required on three consecutive mornings. Patients are requested to abstain from all illicit opiates for approximately twelve hours prior to the first day of Dose Assessment to prevent their use from interfering with dose titration.

Patients are provided with substitute medication, under medical supervision, during the morning of the three days of attendance. Physiological observations (blood pressure, pulse, subjective feelings) are monitored and the patient is asked to return within two hours for a brief medical check-up and additional medication, if required. Patients are typically provided with a low dose of medication which is increased over the three days until a stabilising dose is reached. Dose, or type, of medication can be changed at any time during treatment by negotiation between the patient and the clinical team. Regular treatment monitoring, by urinalysis, checks for the patients' use of illegal drugs. Methadone doses prescribed within the service range from 20mg to 200mg. Figure 2.1 provides an illustration of the different stages in the treatment access and induction process for heroin users presenting for treatment.

Figure 2.1. Diagram of the treatment service assessment procedure




## 2.5 MEASURES USED AND MEASUREMENT ISSUES

This section will describe the common measurement principles utilised in the research programme and the methodological issues considered during the development of the two studies.

### 2.5.1 Structured interviews

Structured interviews were used to collect data on patients' readiness to change and a range of other patient factors relevant to the research questions posed. The relative advantages and disadvantages of each type of survey method were considered and the selection was influenced by the research questions posed and the resources available to examine those questions. The interview protocols used in Study 1 and 2 were designed to be administered via face-to-face contact in a clinical setting. Where follow-up interviews could not be obtained within the clinical setting, responses relied upon the administration of the interview over the phone, or through mail responses. In any longitudinal study with substance users it is often challenging to maintain contact with an inherently mobile group of research participants. In the case of outcome evaluation it is inevitable that a proportion of participants will be lost over time due to death,

illness, moving house, imprisonment, or deciding to withdraw from the study. This attrition has implications about the conclusions that can be drawn from the findings. This issue will be considered in Chapter 5.

Structured interviews provide a quantitative description of attitudes, behaviours or personal characteristics, often about phenomena that are not directly observable (e.g. inner experiences, opinions, values, interests) and takes the form of an ordered series of questions or statements. The aim of this approach is to standardise the order in which questions are asked of respondents, so the questions are always answered within the same context. This is important for minimising the impact of context effects, where the answers given to a question can depend on the nature of preceding questions. Though context effects can never be avoided it is often desirable to hold them constant across all respondents. This also ensures that answers can be reliably aggregated and that comparisons can be made with confidence between sample sub-groups or between different data collection periods. The choice of answers to the questions is often fixed (close-ended) in advance, though open-ended questions can also be included.

Structured interviews can be quick and easy to create, code and interpret, especially if closed questions are used. However, the quality and usefulness of the information is highly dependent upon the quality of the questions asked. The format of the interview makes it difficult for the researcher to examine complex issues concerning the respondents' beliefs, attitudes and inner experiences in any detail or depth. Even where open-ended questions are used, the depth of answers the respondent can provide tend to be more limited than with other methods. Also, by designing a list of questions, a researcher has effectively decided, in advance of the data collection, the issues they consider to be important and unimportant which introduces bias into the selection.

Structured interviews can be administered face-to-face by an interviewer, over the telephone or through self-completion. Each method has certain strengths and weaknesses including differences in comprehension, the accuracy of responses and response rates.

### 2.5.2 Interviewer-administered face-to-face interviews

Face-to-face interviews refer to the collection of information whereby the interviewer asks the respondent a list of pre-determined questions about a carefully selected topic. The British Crime Survey (Chivite-Matthews et al, 2005) and National Treatment Outcome Research Study (Gossop et al, 2000) collected data via face-to-face interviews.

The major advantage of face-to-face interviewing is its adaptability in controlling the response situation, scheduling a mutually convenient time and place, and controlling the sequence and pacing of the questions asked. The interviewer has the chance to build trust and rapport with the respondent which can help achieve and maintain cooperation, increase the quality of the data obtained, and makes it possible to obtain information that might not have been revealed using other types of data collection methods. Response rates can be relatively high in comparison to other methods (Krysan et al, 1993). Face-to-face methods allow for a relatively high degree of flexibility in the interviewing process – more complex issues can be explored as the interviewer can use stimulus material, and probing and prompting to encourage responses can be carried out.

The disadvantages of face-to-face data collection are that they are relatively expensive and time-consuming to perform particularly among large samples of participants as the researcher needs to be present during the delivery of the interview. Face-to-face data collection may also be subject to the potential problem of interviewer bias. Each interviewer will conduct the interview in a slightly different way and there is the possibility that the presence of the researcher may influence the way a respondent answers various questions (e.g. embarrassing questions, intimidating interviewer), thereby biasing the responses obtained. This is known as the ‘interviewer effect’. To minimise the effects of interviewer variance, interviewers are trained to carry out interviews according to the instructions provided and to do so in a professional and objective way.

### 2.5.3 Interviewer-administered telephone interviews

Interview data is sometimes collected from respondents over the telephone. This type of data collection has been used by the National Household Survey on Drug Abuse (Office of Applied Studies, 1992) in the US and the Alcohol Use Survey (Ministry of Health, 2007) in New Zealand. The advantages of this interview method are that it can be more convenient, and often cheaper, to speak on the phone rather that set up meeting times and places. This method allows data to be collected from geographically scattered samples more cheaply and quickly than by face-to-face interviewing. In a telephone interview some of the benefits of social interaction and the chance to build rapport with the respondent may be lost. It can be easier for the respondent to refuse an interview or end it prematurely and harder for the interviewer to encourage the respondent to take part. Non-coverage of households without telephones is also a concern with this method of data collection.

A study comparing the accuracy of data obtained by different survey methods, particularly when asking about sensitive issues, found that telephone interviews obtained lower levels of substance use data than interviewer-administered surveys (Aquilino and Lo Sciuto, 1990). Data collection employing face-to-face and telephone interviews are both susceptible to 'demand characteristics' (Orne, 1959) whereby participants may be motivated to play the 'good subject' and are influenced by their perception of why the research is being conducted and the interviewer's expectations. All of these factors may influence the responses provided.

### 2.5.4 Postal Surveys

Postal surveys are frequently used to obtain information from individuals and groups within the general population. They have been previously used to examine benzodiazepine use in opiate users (Williams et al, 2005) and alcohol use among the unemployed (Hammer, 1992). The main advantages of postal surveys are that they are less expensive than face-to-face or telephone interviews as they do not require skilled interviewers to conduct and that they have the potential to reach large groups of people. Postal surveys are also easy to distribute and analyse (Galpin, 1987). Respondents can complete the questionnaire at their own convenience, answer questions out of order, skip questions, take several sessions to answer the questions and write in additional

comments. Anonymity and privacy often encourage more candid and honest responses. Surveying by mail eradicates the problem of interviewer bias which is sometimes introduced when communicating with an interviewer in person or over the telephone.

Disadvantages to this data collection method include the lack of control over who completes the questionnaire, which may be someone other than the intended respondent. There may also be concerns over the quality of the data received. Incomplete data may result from comprehension problems or literacy issues of the respondents. Respondents may not answer all the questions or in the way that is required. Also, there are often long time delays between the distribution of postal surveys and their return, delaying statistical analysis. Postal surveys typically yield the lowest return rates although this varies according to the participants surveyed and the subject material sought (Asch et al, 1997).

## 2.6 MEASURES USED

The research domains common to both studies were (1) motivation , (2) demographics, (3) substance use, (4) severity of substance use dependence and (5) physical and psychological health.

### 2.6.1 Motivation

The primary objective of the research programme is to examine how motivation changes over the waiting period in a sample of heroin users. In order to examine this it was first necessary to choose a model of motivation and a measure of motivation to examine the variables of interest.

In the field of substance-related disorders several perspectives have directed the research concerning motivation during the last three decades. The most influential of these have included the Social Learning Theory (Bandura, 1977), the Self-determination Theory (Deci and Ryan, 1985) and the Transtheoretical Model of Motivation (Prochaska and DiClemente, 1982).

The Social Learning Theory (Bandura, 1977) incorporates aspects of behavioural and cognitive learning and suggests that a combination of environmental (social) and psychological factors influence behaviour. One aspect of the theory asserts that people wish to avoid negative consequences while desiring positive results or effects. People are more likely to engage in certain behaviours when they believe they are capable of executing those behaviours successfully (self-efficacy) and will be more likely to engage in that behaviour again. The theory's concept of self-efficacy has received considerable research attention, with a number of studies demonstrating increased self-efficacy during treatment to be related to reductions in drug (Long et al, 1998) and alcohol use (Rounds-Bryant et al, 1997).

One of the strengths of the Social Learning Theory is that it combines several important models of learning incorporating cognitive, emotional and social elements. The theory, however, has been criticised on the grounds that it is based on the assumption that behaviour arises from complex interactions between unobservable variables which cannot be assessed (Lee, 1989). Others have asserted that there is ambiguity and lack of definition of the concept of self-efficacy (Eastman and Marzillier, 1984).

The Self-determination Theory (Deci and Ryan, 1985) is a general theory of human motivation concerned with the development and functioning of the personality within social contexts. The theory focuses on the degree to which an individual's behaviour is self-motivated and self-determined. According to the authors, the need for competence, autonomy, and relatedness are innate, universal, psychological needs which motivate an individual to initiate behaviour. Within the field of substance use the theory has been applied to understanding the dynamics of motivation during treatment has been used to predict perseverance in treatment (Ryan et al, 1995). Such work has examined the association between the treatment environment and patients' psychological needs and how these affect behavioural change.

A major strength of the Self-determination Theory is that it makes distinctions between different types of motivation (e.g. intrinsic and extrinsic) and considers what motivates a person at any given time as opposed to treating motivation as a unitary concept which focuses on the overall amount of motivation that people have for particular behaviours. However, some commentators have criticised the theory for its lack of direct scientific

evidence supporting certain hypotheses within the theory (Reiss, 2005; Lepper et al, 1996) and the validity of intrinsic and extrinsic motivation (Reiss, 2004).

### 2.6.2 Transtheoretical Model of Motivation

The Transtheoretical Model of Motivation (Prochaska and DiClemente, 1982) describes the process of change underlying attempts to modify problem behaviours. It was originally developed as an attempt to integrate different concepts from different theoretical models into a single comprehensive framework. According to this model, people progress through a series of stages to successful change. The model assumes that the stage at which a person is at can be accurately assessed and the success of an individual in treatment will depend, in part, upon the stage of change achieved (Prochaska and DiClemente, 1992). More success would be expected for those who are at the later stages of change. The model was originally applied to populations of smokers and has since been applied to behaviours such as substance use, exercise behaviour and gambling (Guillot et al, 2004; DiClemente et al, 1999; Norman et al, 1998). The model incorporates fifteen different theoretical constructs including the Stages of Change, Processes of Change, perceived pros and cons of changing and self-efficacy and temptation. It has been modified several times since its introduction.

The Transtheoretical Model of Motivation (TTM) uses the concept of '*readiness to change'* to represent a more focused view of motivation. Readiness indicates a willingness or openness to engage in a particular process or to adopt a particular behaviour. It has been conceptualised by some as a combination of the patients 'perceived importance of the problem and the confidence in his ability to change' (Miller and Rollnick, 2002).

### 2.6.3 The Stages of Change

The Stages of Change, often presented as 'the cycle of change', represents a fundamental dimension of the Transtheoretical Theory that has been adopted by many clinicians and researchers as a template through which to view the change process. It presents motivational change as an ordered segmented sequence leading from a lack of acknowledgement that a problem exists to the resolution of the problem. The model

proposes a sequence of five stages involving various kinds of affective, behavioural and cognitive appraisal shifts that a person goes through when making behavioural change. Each progressive stage is characterised as increased motivation to engage in the process of behaviour change (Tierney and McCabe, 2001).

The original Transtheoretical Model proposed four distinct stages (Prochaska and DiClemente, 1982). The current model focuses on five stages of change (Prochaska et al, 1992). These include:

*Precontemplation* - during this stage there is no intention to change behaviour. Many individuals in this stage are unaware that a problem exists, do not feel that their behaviour is a problem for themselves or others and are not interested in any kind of help. When precontemplaters present for treatment they often do so because of pressure from others.

*Contemplation* - during this stage people are aware that a problem exists and are aware of the consequences of their behaviour. They are thinking about overcoming their problem but have not yet made a commitment to take action. During the contemplation stage individuals weigh up the pros and cons of the problem and the solutions to the problem. Individuals are more open to receiving information about their behaviour and reflect on their own feelings and thoughts concerning the behaviour.

*Preparation* - in the preparation stage people have made a commitment to make a change, and may be making small changes in preparation for larger changes in the future (e.g. smoking fewer cigarettes each day).

*Action* - in this stage individuals begin taking direct action to change their behaviour in order to overcome their problems. Action involves the most overt behavioural changes, involves a variety of different techniques and requires considerable commitment of time and energy. People in this stage also tend to be more open to receiving help and are also likely to seek support from others.

*Maintenance* – this is the stage at which people work to consolidate the gains attained during the Action stage and prevent relapse. This is achieved by avoiding former behaviours and maintaining new ones.

According to the model, the majority of people who successfully abandon a behaviour do so after cycling through the five stages several times before achieving a stable life-style change. Consequently, the model considers relapse to be part of the process of change. Studies using the Stages of Change have found that particular stages of change are related to greater readiness to change, and individuals who are in these stages report more positive outcomes than other individuals (Smith et al, 1995; Prochaska et al, 1992; McConnaughy et al, 1983). Stages of Change have been shown to predict progress in treatment such as reductions of substance use (Prochaska et al, 1994; Heather et al, 1993; Isenhart, 1997), abstinence (Carey et al, 2001) and retention in treatment (Mitchell and Angelone, 2006; Simpson and Joe, 1993; Cox and Klinger, 1988).

Early applications of the Stages of Change originally used staging algorithms in which each participant was allocated to one of the stages on the basis of responses to questionnaire items. More recent studies with drug and alcohol users have employed multidimensional questionnaires devised to measure attitudes characteristic of each stage. In this approach, each stage is measured by a set of questionnaire items and scores are derived by their position on each dimension.

The original paper summarising the TTM (Prochaska and DiClemente, 1982) is one of the most widely cited papers in psychological literature. However, while the model enjoys popularity in terms of the amount of research literature devoted to it and a large following among clinicians, it is not without its problems or critiques. A number of commentators have questioned whether the TTM provides a valid description of the process of change (Sutton, 2001; Davidson, 2001). Many of the criticisms of the model have surrounded the use of the Stages of Change. Evidence for the stages is based on clustering of responses to questionnaire items – those believed to be part of one stage hold together in cluster analyses far more than those from different stages. However, Cooper (1997) states any questionnaire can yield such a structure if the items which cluster ask the same questions in different ways. A number of studies have shown a lack of clear distinctions between the stages. Sutton (2001), for example, reported that

clusters emerging from statistical analysis of the question responses do not always correspond to the supposed stage. Other studies have also reported large correlations between adjacent and non-adjacent scales. A particular stage should attempt to capture the unique features of the stage (Sutton, 2001), yet these two sets of findings demonstrate that the scales are not distinct from each other.

Criticism has also been directed at some of the questions on the staging algorithms which assess stage position according to a particular time period (e.g. to be assigned to the precontemplation stage individuals must have 'used unauthorised drugs in the last 30 days, do not plan to quit in the next 6 months' whereas to be assigned to the contemplation stage individuals are asked whether they have used authorised drugs in the last 30 days, plan to quit in the next 6 months but not in the next 30 days'). The resulting classification system incorporates a time-element. One of the problems with this is that the time periods are arbitrary and individuals in different stages appear to differ only in their timing of their intention to change. Using different time periods would lead to individuals being assigned to a different stage. From this perspective stages are not qualitatively distinct but are arbitrary time segments which may not mirror any altered psychological states (West, 2005; Sutton, 2001) DiClemente (2005) responded to these criticisms by explaining that making a concept (i.e. Stages of Change) operational so that one can assess the phenomena is always arbitrary, and simply an attempt to create a dividing line that could be useful in isolating a concept or construct – this is true for many new psychological concepts such as depression, anxiety, addiction – and there are many ways of operationalising these constructs.

Prochaska and DiClemente (1992) stated that successful recovery from addiction can only occur after every stage has been passed through, having found no successful changers who have missed a stage. However, there is little empirical evidence to show that people progress through the entire stage sequence (Littell and Girvin, 2002; Bunton et al, 2000), and evidence suggests that a significant proportion of individuals are not assignable to the recognised stages (Kearney et al, 1999; Pierce et al, 1998). These findings question whether these stages reflect reality. Prochaska and DiClemente (2005) account for such findings, by explaining that stage transitions can be rapid and measures taken months apart may miss detecting each transition. This explanation would be difficult to confirm as constant observation and questioning would be required to

capture the moment a stage transition occurred. DiClemente (2005) went on to explain that the stages organise tasks into a logical sequence of activities that seem to build upon one another. The stages represent tasks that can be accomplished to a greater or lesser degree but should not be viewed as boxes from which individuals jump, one to the next.

There is a proliferation of instruments which claim to measure stage status yet few studies have compared the findings from the use of these different instruments. Farkas et al (1996) found that different algorithms used in different measures have produced markedly different stage distributions among the samples. The incompatible ways of measuring stage status and the lack of standardisation between instruments makes it difficult to compare the results from different studies into a coherent body of knowledge (Etter, 2005).

There are also a number of omissions to the model. The model does not take into account dependence level, withdrawal symptoms or other key determinants of substance use such as social factors. The authors were explicit about excluding a social dimension to their model, however, many decisions to change are often influenced by social, cultural and environmental influences. For example, entry into drug abuse treatment may be precipitated by health problems, the drying up of sources of supply, changes in social networks, legal or family coercion rather than decisions taken after due consideration of the pros and cons of behaviour change as the authors suggest.

Whitelaw's review of the evidence for the Stages of Change found that only a small number of studies using the stages had assessed outcomes. If stages are depicted as signposts or progress towards an end goal (e.g. abstinence) then reaching more advanced stages should signify greater change in the behaviour (Whitelaw et al, 2000). Although a number of studies of smokers and alcohol-dependent patients have found that measures of the stages often predict later outcomes (e.g. Hernandez-Avila et al, 1998; DiClemente and Prochaska, 1998) there has often been a lack of consistency in the pattern of results (Littell and Girvin, 2002). Much of the research into outcomes using the TTM has been cross-sectional (e.g. Kearney et al, 1999: Jamner et al, 1997), thus preventing the assessment of the premise of the model – that change occurs over time. The outcome research has often used small or self-selected samples (Wilson, et

al, 1997; Campbell, 1997) which are likely to be more motivated than random samples, and these studies have failed to include control groups.

A number of commentators have also questioned the uncritical use of the model in clinical service delivery. The model has been used to guide interventions in a variety of problem areas despite the lack of a strong evidence base for stage-matching interventions. Interventions based on the model have not been consistently proven to be more effective than control interventions or no intervention at all (Riemsma et al, 2003; van Sluijs, 2004). Such practice may mean that patients who are deemed to be in an early stage of change may be deprived of effective treatments compared to those deemed more ready to change.

The Transtheoretical Model is by far the most prominent model of motivation of addictive behaviours among both clinicians and researchers (Sutton, 2001). Despite the theoretical and empirical shortcomings of the model, the TTM continues to be an important stimulus to theory and practice development. The purpose of the TTM, and the research examining the model, has been to enhance our understanding of the process of change and to stimulate testable hypotheses that will hopefully lead to enhancements of our understanding of complex phenomena such as the change process. As Stockwell (1992) states, unlike theories, models can have faults yet still promote understanding and discovery. The Stages of Change provide a useful framework in which to examine change or progress in diverse populations, they also avoid overly-simplistic classifications of substance abusers as 'motivated' or unmotivated'. The model also reminds clinicians that substance users vary in their commitment to change, and that those in the earlier stages of change will require longer time to progress with changes than those in the later stages of change.

The current research programme will select a measure of motivation based on the TTM as the Stages of Change dimension is considered to be a useful method for describing the common aspects of patient experiences and recovery. Measures based on the model are widely used in the treatment service in which the research progamme is conducted. The two studies within the research programme will utilise longitudinal designs to assess motivation at several time points among samples of heroin users and will measure actual changes in motivation over time. This design will more accurately

reflect the premise of the model – that change occurs over time. In order to avoid some of the previously noted criticisms regarding staging algorithms, only multidimensional questionnaires will be considered in the choice of the specific measure.

### 2.6.4 Selecting a measure of motivation

There are a plethora of instruments which aim to assess attitudes and intentions characteristic of each of the Stages of Change. The instruments vary in their methods of assessment, theoretical underpinnings and their intended populations. Selection of a measure of motivation resulted from a combination of consultation with clinicians working in drug abuse treatment settings and research into the available, and most widely use, measures cited in the substance abuse literature. Once the most widely used instruments were identified, the choice of measure was based on a number of factors including administration time and the complexity of administration, previous use on drug-using populations and the psychometric properties of the instruments. The following commonly used measures were considered:

*University of Rhode Island Change Assessment (URICA; McConnaughy et al, 1983):*
The URICA is a 32-item questionnaire designed to measure each stage of change with responses recorded on a Likert scale. Cluster analyses of responses on the assessment assign people to a stage. Factor analysis of the instrument commonly reveals a four-factor structure (DiClemente and Hughes, 1990; McConnaughy et al, 1983), although a number of studies have failed to find a consensus on standardised rules for stage assignment on the URICA. Attempts to assign stage status have found between two and nine identifiable stage profiles rather than the five distinct stages proposed by Prochaska and DiClemente (Carney and Kivlahan, 1995; DiClemente and Hughes, 1990).

Due to the problems associated with stage assignment noted in the previous studies the URICA was not considered suitable as a measure of motivation for the current research programme. Cluster analyses to assign a person to a stage was considered too complex for the scope of the research programme and the measure was also considered to be too long to administer as it was to be included in a battery of other measures on a structured interview. In addition to these factors, items in the URICA refer to the person's

'problem', rather than a particular behaviour. As poly-drug use is common among substance users engaged in treatment (Marsden et al, 2000), the measure needed to focus on their primary substance of abuse (i.e. heroin) independent of other classes of drugs.

*Readiness to Change Questionnaire (Rollnick et al, 1992):* This 12-item measure was developed to be used with excessive drinkers to assign them to an optimal form of brief intervention according to their stage of change when they presented to a medical setting for reasons other than an alcohol problem. Questionnaire items provide scores for three scales representing the Stages of Change (Precontemplation, Contemplation and Action). The questionnaire allocates individuals to a particular stage on the basis of their highest score on the three scales. The measure has satisfactory psychometric properties (Rollnick et al, 1992) and predictive validity (Heather et al, 1993).

The Readiness to Change Questionnaire was not considered suitable for use within the research programme as a number of studies have found low internal reliability for the first two sub-scales which does not support the use of this questionnaire in a treatment context (e.g. Gavin et al, 1998).

*The Stages of Change, Readiness and Treatment Eagerness Scale (SOCRATES; Miller and Tonigan, 1996):* The SOCRATES is one of the most widely used instruments for measuring motivation to change substance use behaviours. The measure was originally designed to assess readiness to change in alcohol abusers and has since been adapted to be used with drug users. The latest version of the measure poses nineteen questions about drug or alcohol use. Each statement can be endorsed on a five point scale with '5' referring to strongly agree and '1' strongly disagree. Despite its intent to represent the four original stages of the Transtheoretical model, factor analyses of the measure supports three independent scales rather than discrete stages. These scales have been named Recognition, Ambivalence and Taking Steps. Its structure of "continuously distributed motivational process that may underlie stage of change" (Miller and Tonigan, 1996) seeks to avoid some of the criticisms concerning the separate stages of change. Similar three factor structures have been reported in other studies using the measure (Figlie et al, 2004; Vik et al, 2000).

*Recognition* – reflects the extent to which substance users acknowledge that they are experiencing a substance abuse problem and perceive experiencing harm if they do not change their behaviour (e.g. 'I have a serious problem with drugs'). High scores on this scale indicate some openness to reflection, as might be particularly expected in the contemplation stage of change. Low scorers deny that substance use is causing them serious problems and do not express a desire for change. Seven statements make up the Recognition scale.

*Ambivalence* - is viewed as reflecting the degree of conflict about substance use and changing substance use behaviours (e.g. 'Sometimes I wonder if I am an addict'). High scorers say that they sometimes wonder if they are in control of their substance use, are taking too many substances and are hurting other people, and/or are addicts. Thus a high score reflects a high degree of conflict or uncertainty. Low scorers say that they do not wonder whether they use drugs too much, are in control, are hurting others, or are a drug addict. Note that a person may score low in Ambivalence either because they "know" their drug use is causing problems (high Recognition) or because they "know" that they do not have drug use problems (low Recognition). Thus a low Ambivalence score should be interpreted in relation to the Recognition score. Four statements make up the Ambivalence scale.

*Taking Steps* – this scale represents the extent to which substance users report they are already making changes in their substance use (e.g. 'I'm not just thinking about changing my drug use, I'm already doing something about it'). High scorers report that they are already doing things to make a positive change in their substance use, and may have experienced some success in this regard. Change is underway, and they may want help to persist or to prevent backsliding. A high score on this scale has been found to be predictive of successful change. Low scorers report that they are not currently doing things to change their substance use, and have not made such changes recently. Eight statements make up the Taking Steps scale.

Scores for the Recognition scale have a possible range of 7-35, for the Ambivalence scale a range of 4-20 and for the Taking Steps scale a range of 8-40 (SOCRATES scoring sheet, Appendix 9). Individual scores on each scale are ranked as 'low', 'medium' or 'high' relative to people already presenting for alcohol treatment. These

interpretative ranges for the scales are based on a large sample of adult men and women presenting for treatment of alcohol problems through Project MATCH (Project MATCH Research Group, 1993). Miller and Tonigan (1996) reported test-retest reliability and internal consistency for these scales. The SOCRATES has also been found to correlate with other measures of motivation (e.g. Mitchell and Angelone, 2006).

The SOCRATES was chosen as the measure of motivation to be used in the current study. This choice was based upon a number of features of the measure. While studies on motivation have often been criticised for failing to specify the target behaviour (Belding et al, 1995), the SOCRATES allows the specification of the target goal of behaviour change and two separate versions of the measure specifically for drug (version 8D) and alcohol (version 8A) abusers exist (Centre on Alcoholism, Substance Abuse and Addictions, CASAA, 1995). The choice of this measure also avoids some of the debate concerning whether motivation, or readiness to change, is best conceptualised as a continuum or by discrete stages (Bandura, 1997; Sutton, 1996) as it is based on underlying dimensions of motivation derived from factor analysis.

The suitability of the SOCRATES for measuring change among heroin users will be examined within the research programme – the measure will first be piloted on a sample of heroin users entering substance use treatment. If the SOCRATES is capable of detecting changes in readiness over time it will then be used to assess readiness in a sample of heroin users awaiting treatment entry.

## 2.7 Demographics

Five main demographic characteristics were chosen to be included in the two research studies. These were - gender, age, ethnicity, employment and relationship status. These characteristics were used to –

(a) describe the samples used within the research studies,
(b) demonstrate that the selected samples are representative of drug-using populations recorded in other studies, and

(c) explore the influence of these characteristics on the research questions under investigation.

Demographic information was collected as the drug abuse treatment population vary in gender, age, ethnicity, employment, relationship status and a number of other social and economic, health and drug-dependence factors (Hubbard et al, 1989). The literature indicates that some of these factors are correlated with motivation (Carpenter et al, 2002), treatment events including entering treatment **(**Brady and Ashley, 2005; King, 2004) and with post-treatment successful outcomes (McLellan et al, 1996; Anglin and Hser, 1990).

The categories used for ethnicity and relationship status were drawn from the 2001 UK (Office for National Statistics, 2005;Appendix 8). Collection of ethnicity data relied on an individuals' self-definition, a method frequently employed for ethnic categorisation in the UK. The ONS classification system used within this thesis included 16 ethnic categories and a category for 'other ethnic groups' not already included in the list. Collection of ethnicity data is important as a number of studies have shown the existence of treatment system biases (e.g. ethnic differences between patients and providers) and ethnic differences in health beliefs and perceptions about substance use problems may hamper treatment access (Farabee et al, 1998; Kaskutas et al, 1997).

## 2.8 Substance use

Substance use in this research programme was measured using the substance use domain of the Maudsley Addiction Profile (MAP; Marsden et al, 1998).The MAP is a brief multi-dimensional instrument for assessing treatment outcome for people with drug and/or alcohol problems. This measure was chosen because it was designed, and is regularly used, within the South London and Maudsley NHS services where the data collection for this research programme was conducted. The measure has established reliability and validity (Marsden et al, 1998). Assessment of substance use for the research programme was limited to alcohol and the following non-prescribed drugs: heroin, methadone, crack cocaine and cannabis. For each substance, the subject is asked to recall: (i) the total number of days used in the last 30 days; (ii) the typical amount used across a day when using; and (iii) the main route of drug administration (oral,

intranasal, inhalation or intravenous). This measure was designed to be administered at the first contact with the treatment service and at one or more follow-up points.

### 2.8.1 Measuring substance use

The incidence and frequency of substance use are frequently used outcome measures to assess consumption pattern among substance users although both of these factors are difficult to measure accurately. The measurement of substance use in social research often relies on self-report from substance users (Johnston and O'Malley, 1985; Gawin and Kleber, 1984). Self reported substance use is usually reported as the amount of substance used (e.g. grammes of heroin), days of use of the substance in a given time frame (20 days in the last 30 days) or the amount of money spent on drugs (e.g. £200 per day). Objective measures of substance use, such as urinalysis and hair sampling, are also available but are intrusive for patients and are costly to analyse.

### 2.8.2 Use of different recall periods

Social research often involves the collection of information about past events and behaviours. It is common for surveys addressing changes in substance use to estimate substance use at different time points using a set of recall periods. A recall period refers to the collection of data about behaviour within a specific time period which participants are asked to recall. The recall periods used are key to ensuring that the full scope of the behaviour pattern is captured by the measures used. Different studies have used different recall periods to measure recent substance use. Recall periods typically used are substance use in the past 30 days, the past year and lifetime use. The 30-day recall period used in the current research programme has been used in a variety of research instruments assessing substance use patterns (e.g. Marsden et al, 1998; McLellan et al, 1992). Although smaller periods of recall (e.g. past week) are also used in substance use research, longer periods are thought to more adequately capture substance use which may happen intermittently or less frequently than a week's recall would capture (Napper et al, 2010).

## 2.9 Severity of substance use dependence

Illicit drug use disorder and dependence were assessed using the Severity of Dependence Scale (Gossop et al, 1995). This 5-item scale concerns the psychological aspects of dependence specifically related to impaired control over substance use and anxiety towards substance use. The scale was selected on the basis that it can be used to assess dependence of any illicit drug or alcohol. Studies have reported that the scale has good psychometric qualities for heroin, cocaine, amphetamine, benzodiazepine and alcohol-using populations (Gossop et al, 2002a; Kaye and Darke, 2002; Ferri et al, 2000). Each of the five scale items is scored on a 4-point scale (0-3) with endorsements for each item ranging between the frequencies of 'never or almost never' (0) to 'always or nearly always' (3). The total score for the scale ranges between 0-15 with higher scores representing a higher level of dependence.

## 2.10 Physical and psychological health

Measures of physical and psychological health functioning were derived from the Maudsley Addiction Profile (Marsden et al, 1998). A 10-item physical health symptom scale included items assessing the frequency of problems including poor appetite, fatigue and muscle pains. A 10-item psychological health symptom scale assessed the frequency of feelings such as fearfulness, hopelessness, and loneliness. Patients rated the frequency of symptoms on a five-point Likert scale ranging from 'never experience' (0) to 'always experience'(4). Each scale was scored by summing the item weights (0-4) across the 10-items on each scale; the total can therefore range from 0-40, with higher scores indicating a greater number of symptoms.

## 2.11 MEASUREMENT ISSUES

### 2.11.1 Reliability and validity of self-report data among substance users

The predominant means of obtaining data from substance users on their consumption patterns is through self-report (Darke, 1998; Gawin and Kleber, 1984). The primary national and international studies that collect information on substance use prevalence and trends, such as the National Treatment Outcome Research Study (Gossop et al, 2001), the Drug Abuse Treatment Outcome Study (Simpson et al, 2002) and The Drug Abuse Reporting Program (Hubbard et al, 1989) all employ self report interview formats to collect data. Self-report measures can be obtained through various methods including self-completion questionnaires and through interviewer-administered questionnaires.

The advantages of self-report data are that they give the respondents' own views, perceptions or experiences which are often unobtainable in any other way (Barker, et al, 2002). Such measures are also relatively easy to administer to large samples, and the responses are easily quantifiable and thus can be analysed. Biochemical markers such as urinalysis, saliva tests and radioimmunoassay of hair are sometimes used to collect information on substance use but these methods are costly, intrusive and cannot assess drug use histories, or the frequency or quantity of drug use over extended periods of time (Wolff et al, 1999; Darke, 1998).

Despite the widespread use of self-report measures, concerns about their accuracy in describing substance use patterns have been raised for several decades (Skog, 1992; Ball, 1967). It is believed that self-report may not accurately reflect substance use for several reasons. Respondents may respond in a manner that will be viewed favourably by others concerning less socially desirable behaviours, such as intravenous drug use and needle sharing (Bardone et al, 2000; Measham et al, 1998), or if there are perceived negative consequences associated with reporting certain behaviours such as expulsion from treatment programmes which require abstinence (Sherman and Bigelow, 1992; Magura et al, 1987). Substance users may unintentionally distort information either due to faulty memories over extended periods of time, lack of knowledge or poor

judgements over quantities of drugs. Distortion in recall over long periods of time may be a threat to reliability of the study results.

*Reliability* refers to the "…extent to which measures are repeatable by the same individual using different measures of the same attribute or by different persons using the same measure of the attribute" (Nunnally, 1967). Operationally, reliability refers to the "consistency" or "repeatability" of the measure (test scores) over time. The most common test of reliability of self-report behaviours is 'test-retest reliability' and concordance between different interviewers. In test-retest reliability participants are re-interviewed with the same questions used in the original interview and the correlation between the responses is examined (Levy et al, 2004). A number of studies have investigated the reliability of self-reported substance use and have found high reliability over varying recall periods with treated and untreated substance users (Darke, 1998; Adelekan et al, 1996; Ehrman and Robbins, 1994).

*Validity* refers to the degree to which the questions measure what they claim to. In terms of substance use, validity tests whether the measure accurately assesses the actual substance consumption of the individual. A widely used test of validity is 'concurrent validity' which refers to the degree of agreement between self-report and some other current measure of behaviour such as urinalysis (Harrison, 1995) or hair testing (Ledgerwood et al, 2008). Self- eported substance use has consistently shown high concordance with independent measures of substance use (Adelekan et al, 1996; Bale, 1979). Routine drugs monitoring through urine samples takes place regularly within the treatment service used within this research programme and can be used by the service to verify personal reports of drug use.

Toneatto et al (1992) reported that a significant body of literature published over the preceding fifteen years demonstrates that adult substance abusers' self-reports are generally accurate, provided that they are conducted in a clinical or research setting, that the patient is not under the influence of alcohol and that they are given assurances of confidentiality. Despite the limitations of self-report measures, the consistency of the findings using different methodologies and in different countries suggests that self-report measures are sufficiently reliable and valid in providing descriptions of current substance use and substance use histories.

In order to reduce some of the disadvantages associated with self-report data in the current research programme assurances of confidentiality were made to each study participant. It was made clear to the patient that information would only be discussed within the research team and that no information would be passed to the clinical teams responsible for their treatment. Participants were assured that no identifying information would be entered into the research programme database and that data would be analysed by the researcher only.

As well as highlighting problems which may affect the reliability and validity of information collected from the heroin users involved in the studies, it may also be necessary to question the accuracy of the clinical records used to collect information within the two studies. The waiting time for each patient recruited to the two studies was retrieved from clinical records held within the treatment service. This information could be verified accurately in Study 2 as participants were recruited to the study at the start of their waiting period and were re-interviewed around the time of their scheduled treatment entry. Waiting time, however, could not be accurately verified in Study 1 as the patients were first interviewed by a researcher for the study at the end of the waiting period, with no researcher contact prior to this. In these cases, the date of the first contact with the treatment service was collected from clinical records completed by the key-workers. There is a possibility that this information may not have been accurately recorded, thus affecting the calculation of the waiting period (days between Brief and Full Assessment). However, it acknowledged that a degree of human error in information reporting may be present in all research and therefore undue concern over this possible problem was not deemed necessary.

## 2.12 OVERVIEW OF DATA MANAGEMENT AND STATISTICAL PROCEDURES

### 2.12.1 Security issues (data protection)

Data protection procedures according to the Kings College London Research Ethics Committee (2001) and the Helsinki Declaration of 1983 (World Medical Association, 1983) were adhered to. Completed interviews and personal locator information were anonymised with a numerical identifier and were stored in a locked cupboard at the research programme site. An SPSS database containing the numerical identifier and corresponding participant name and details was kept on a password-protected computer at another location.

### 2.12.2 Dealing with multiple measures

The research programme involves the testing of multiple comparisons. When multiple comparisons are being made within an experiment the probability of observing a statistical difference for one of the comparisons increases with the number of comparisons being made. A false positive can arise as a result of random variability, even when no effect exists (Ludbrook, 1998). Under these circumstances this would lead to the rejection of a null hypothesis when it is actually true. This is referred to as a 'type 1' error.

For several decades there has been an on-going discussion about the need and methods by which to adjust for multiple comparisons in order to judge the quality of experimental research (Feise, 2002; Ludbrook, 1998; Tukey, 1977). Although a number of multiple comparison procedures have been developed (e.g. False discovery rate step down procedure, Bonferroni Correction) no consensus on the best procedure exists and selection often depends on the requirements of reducing the risk of rejecting a null hypothesis while maintaining the likelihood that an experimental effect is detected.

In order to control for the effect of multiple comparisons in the current research programme a Bonferroni Correction will be employed. This procedure effectively raises the standard of proof needed when a wide range of hypotheses are looked at

simultaneously. The Bonferroni Correction is applied by dividing the alpha level by the number of comparisons. (e.g. if we were examining 5 comparisons, rather than testing at the traditional 0.05 alpha level we would test at 0.05/5 = 0.001 level. This would ensure that the overall chance of making a type 1 error is still less than 0.05).

Some have argued that the Bonferroni method is too stringent (Feise, 2002) and the chances of finding a significant difference between variables become more difficult to detect even when differences exist. When working with small samples, reducing the alpha value may leave insufficient power to detect differences with small effect sizes. This is known as a 'type 2' error. This is the error of accepting a null hypothesis when the alternative hypothesis is true (failing to observe a difference when in truth there is one). For this reason, statistical testing within Study 1 and 2 will reduce the accepted p-value from 0.05 to 0.01. Results with, and without, Bonferroni adjustments will be presented.

### 2.12.3 Missing data

The authors of the SOCRATES (Miller and Tonigan, 1996) provided no instructions as to how to deal with incomplete data sets. Due to possible variations between researchers conducting the structured interviews and some study participants completing the measures by mail there were a number of missing values in the data set. Many statistical procedures (e.g. repeated measures t-test) will eliminate an entire observation or case if there are any missing data in the defined variables. For this reason when working with small sample sizes it is preferable to avoid this. Tabachnick and Fidell (2001) recommend substituting the missing value with the group mean. However, Smeding and Inge de Koning (2000) argue that the method of replacing all missing values irrespective of its cause is not valid and feasible and must be done with caution. In the context of this research programme there were a number of participants with missing SOCRATES data on each interview (e.g. baseline and 3-month follow-up), replacing this data with the group mean would have provided a profile of responses which would not accurately reflect genuine change over time. As there was no pattern to the missing data within, or between, participants, those with missing SOCRATES data on any interviews were excluded from the analyses.

### 2.12.4 Outlier management

The frequencies programme (SPSS Windows, version 16, 2008) was used to identify the presence of outliers in the dataset. Outliers are extreme values (those that are numerically different) in relation to those observed within the sample as a whole. Any statistical test based on sample means and variances can be distorted with the presence of outliers, particularly in studies with small sample sizes. Methods for managing outliers include recoding the score with the preceding highest value (so that they are still extreme but fit within a normal distribution) deleting the extreme cases or, if the outliers appear to be part of an overall non-normal distribution, transforming the data (e.g. logarithmic transformations) after checking for normality. Transformation is a mathematical operation that changes the measurement scale of a variable. For the purposes of this research programme two different methods of outlier management were utilised - logarithmic transformations and re-coding of the outliers to the preceding highest or lowest value.

### 2.12.5 Data transformations

The distribution of variables was examined using SPSS frequencies programme to generate histograms and to identify skewness and kurtosis. Skewness is a measure of the lack of symmetry of a sample distribution. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. Tabachnik and Fidell (2001) recommend transforming variables where variables are moderately skewed to aid interpretation. Logarithmic and square root data transformations were performed on skewed variables to create a more normal distribution. This was to maximise the use of parametric tests of analysis. These are detailed in the relevant studies. Statistical analyses were performed using SPSS 16 (SPSS, 2008). Statistical tests used within the two research studies will be summarised at the beginning of each chapter.

## 2.13 SUMMARY OF CHAPTER 2

This chapter described some of the broader methodological issues in relation to the research programme. The selection of study design and a description of the specific methods and procedures used within each study will be addressed within the relevant study chapters.

# CHAPTER 3: STUDY 1

## 3.1 INTRODUCTION

The primary purpose of this research programme was to examine the relationship between treatment waiting times and readiness to change heroin use and the influence of this relationship on treatment entry and substance use over the waiting period. In order to reliably examine this relationship readiness will be assessed at the beginning and end of waiting periods of different lengths. This section of the thesis reports on a Pilot Study assessing whether the chosen measure of motivation - the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) - was capable of detecting changes in readiness over time in heroin users.

Pre-testing of the SOCRATES was necessary as previous research using the measure to examine readiness to change has focused primarily on smokers or alcohol-using populations (Figlie et al, 2005; Maisto et al, 1999) and has relied upon a static concept of motivation. Within these studies, motivation is usually assessed at the start of treatment, and is used to predict future outcomes such as abstinence and treatment retention (Miller, 1985). This static measurement of motivation has been criticised because it ignores the premise of the Transtheoretical Model on which the measure is based – that people change their behaviour over time through a series of stages that represent progressively greater commitments to change. This Pilot Study assesses readiness to change at three different points in a sample of heroin users at the start of a new treatment episode, and three and six months later.

## 3.2 RESEARCH OBJECTIVES

The four objectives of the Pilot Study are -

1. To examine whether the SOCRATES can detect statistically significant changes in readiness over time among a sample of heroin users. These results will determine whether it is feasible to proceed with the use of the SOCRATES in the second study which examines changes in readiness over the course of a waiting period prior to treatment entry.

2. To pre-test a set of research measures on the structured interview to be used in Study 2. This will include collecting information from study participants regarding the content, wording and the ordering of the questions on the interview schedule.

3. To check that the investigator was sufficiently skilled in administering the interview schedule.

4. To conduct a preliminary examination of the relationship between the length of the waiting period and readiness to change. It is expected that heroin users who experience long waiting periods prior to the start of treatment will have lower levels of readiness at the beginning of treatment relative to those heroin users who experience shorter delays.

## 3.3 METHOD

### 3.3.1 Study design

A within-subjects repeated measures longitudinal cohort design was used to assess readiness to change at three time points in order to examine the direction and magnitude of change in a sample of heroin users at the start of a new treatment episode at a community out-patient treatment service. Structured interviews were conducted with patients after their first clinical appointment at the service after waiting periods of varying lengths, and three and six months later. The readiness of all patients was examined regardless of their treatment status (in treatment/out of treatment) at the time of the follow-up interviews. Patient records were used to provide information on the length of the waiting period prior to treatment entry in order to examine the relationship between treatment waiting times and readiness to change. Data for this study were collected in connection to a larger study investigating the early impact of treatment for substance abusers, details of which are reported in Best et al (2002) (Appendix 10) .

### 3.3.2 Study sample

The sample for the current study comprised forty individuals attending a statutory substance abuse treatment service in South London for the treatment of heroin use. The Community Drug Team (CDT) provides community-based detoxification and reduction

programmes primarily for individuals seeking help with opiate problems. Details on the treatment service, the process of treatment access and induction within the service is presented in Chapter 2. Access to treatment includes a Brief Assessment conducted with a psychiatric nurse or drug counsellor through an open-access clinic, followed by allocation to a clinical team within the service. Heroin users are typically placed on a waiting list operated by each clinic until a treatment slot becomes available. Treatment entry after the waiting period begins with a Full Assessment with a member of the relevant clinical team to assess current substance use. This is followed by a three-day Dose Assessment procedure to establish a therapeutic dose of methadone.

### 3.3.3 Inclusion/exclusion criteria

Full details of the inclusion criteria for the current study are presented in Chapter 2 and include: (1) individuals attending the treatment service for their first clinical appointment of a new treatment episode, (2) heroin use in the 30 days prior to the first clinical appointment, (3) aged between 18 and 65 years, (4) a diagnosis of heroin dependence, (5) fluent in the English language.

### 3.3.4 Measures

Two structured interviews were developed to assess a number of measures considered relevant to testing the research programme hypotheses examined in the main waiting list study (Study 2). The interviews in the Pilot Study were designed to obtain baseline data at the start of treatment and follow-up data three and six months after this time. The first interview collected baseline data on demographic characteristics including gender, age, relationship status, ethnicity and employment. Information on readiness to change, substance use, patterns of dependence, health risk behaviours and physical and psychological health in the 30-days prior to the interview were collected on the intake and follow-up interviews. Additional details on the measures used are provided in Chapter 2.

### 3.3.5 Ethical approval

Ethical approval for the study was granted by the South London and Maudsley NHS Trust Ethical Committee (Study No. 036/98) in 1998. The study was carried out in accordance with of the Declaration of Helsinki (World Medical Association, 1983) for experiments involving humans. Data was collected from the treatment service over a 14-month period.

### 3.3.6 Procedure

The researcher liaised with the clinical teams on a weekly basis to establish when a patient with a heroin use problem was assigned a place at the service. Clinical notes were reviewed for eligibility against inclusion and exclusion criteria, and for evidence of the capacity to provide informed consent. The researcher then sought confirmation from the responsible key-worker that the patient was well enough to participate in the research. Consecutive admissions of patients eligible for participation in the study were approached directly by the researcher after their first clinical appointment at the treatment service. This was typically after the final day of Dose Assessment.

The researcher explained the purpose of the study and the data collection procedures to each identified heroin user and provided them with an information sheet (Appendix 1). If the patient agreed to participate in the study they were asked to read and sign a consent form. They were informed that trial participation was voluntary and refusal would not affect the treatment they received. The *intake research interview* (Appendix 2) was conducted immediately following study recruitment, or if this was not convenient for the patient an appointment was made to conduct the interview within the following few days. Patient recruitment and the administration of the structured interviews were carried out by an experienced researcher trained in the administration of research instruments. The researcher was not involved in any aspect of the patients' treatment.

### 3.3.7 Conducting the research interview

The intake interview was conducted in a private room within the treatment service and lasted approximately forty minutes. The interview began with the researcher explaining the purpose of the study again. The interview was delivered in a fixed order, commencing with demographic characteristics, followed by physical and psychological health, the substance use assessment, health risk behaviours, Severity of Dependence scale and the SOCRATES. Information collected on the intake interview referred to behaviours in the previous 30 days (e.g. 'how many days in the last 30 have you used heroin?'). Patients were offered a £10 voucher to recompense them for their time and their assistance.

Details concerning the waiting period of each patient was collected from clinical notes kept within the treatment service. Waiting time was defined by the clinic, and for the purposes of this research programme, as the number of days between accessing treatment (attending Brief Assessment) and treatment entry (Full Assessment).

All study participants were contacted 3 months (*3-month interview*) and 6 months (*6-month interview*, Appendix 3) after the intake research interview. The same structured interview was conducted at two follow-up points. Research measures used within the follow-up interviews covered the 30-day period prior to the 3- and 6-month interviews. Follow-up interviews were sought regardless of whether the study participant was still engaged in treatment at each follow-up point. The same researcher conducted all follow-up interviews. These follow-up interviews were conducted face-to-face in the treatment clinic or at a mutually agreed public meeting place. When a research interview was conducted outside of the clinical environment two researchers were present. If the patient could not be contacted within several weeks of the 3-month interview, further contact was attempted six months after the intake interview.

### 3.3.8 Participation rates

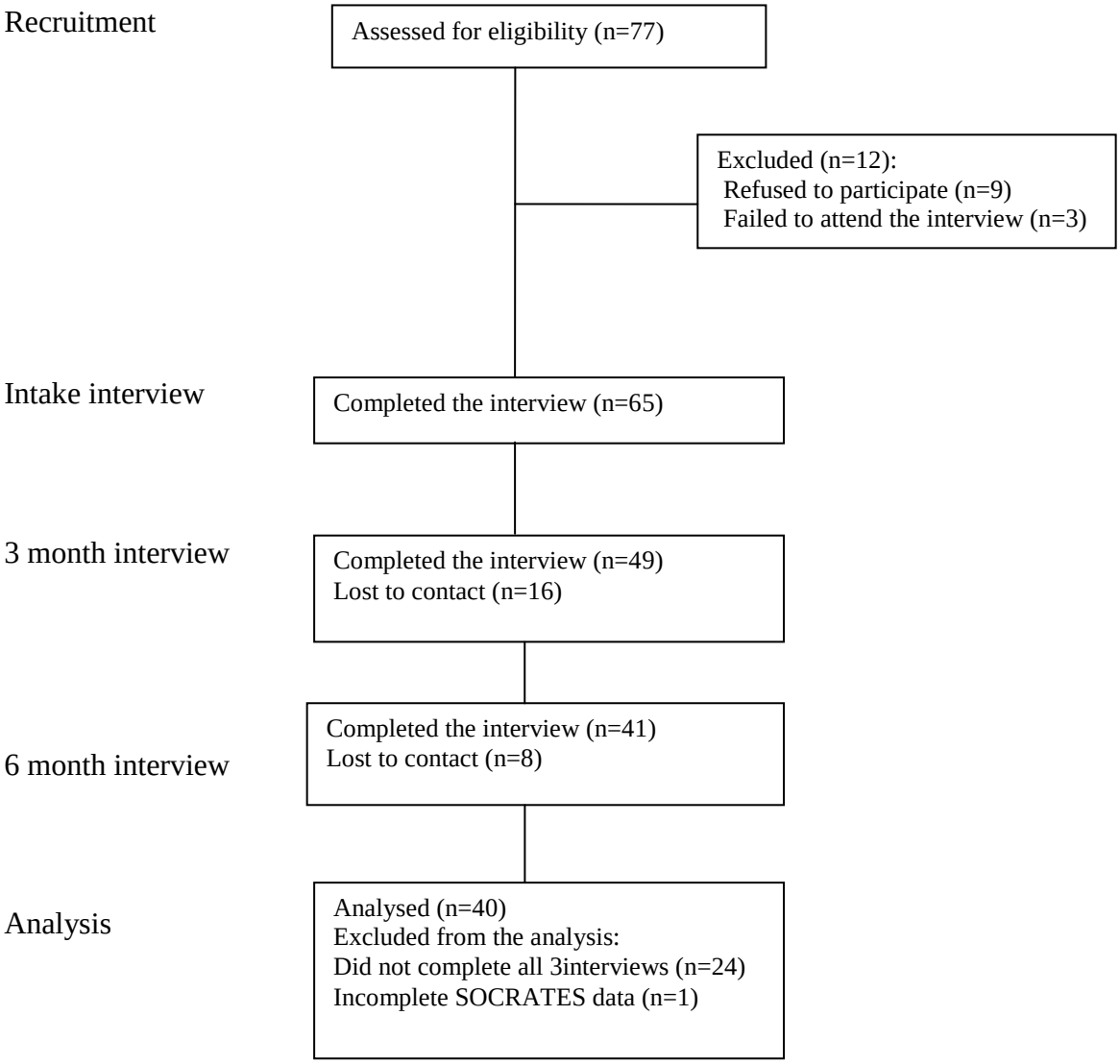
A total of 77 treatment patients eligible for study participation were approached. These patients met inclusion criteria based on information gathered from their clinical notes and from the clinical teams. Of these 77 patients, 9 refused consent and 3 who had agreed to participate failed to attend the intake interview. Attempts to contact these patients were unsuccessful and they did not return to the service for treatment. It was not possible to evaluate whether those who refused to participate in the study were systematically different from those who agreed to participate. Sixty-five patients were successfully recruited to the study (Figure 3.1).

At the 3-month interview 49 (75.4%) patients completed an interview. Sixteen (24.6%) patients could not be interviewed in the time-frame for this follow-up due to difficulties locating them. At the third follow-up point, 41(63.1%) patients were interviewed. This included 3 patients who could not be contacted at the 3-month follow-up but were successfully located at the 6-month interview point. A further 8 (12.3%) patients could not be contacted for the 6-month follow-up interview.

Only patients who completed all three research interviews were included in the analysis. As the authors of the measure provided no information on how to deal with missing data, patients with missing SOCRATES data on any of the interviews were excluded from the analyses. At the 3-month interview 1 patient had missing SOCRATES data. Data is presented on the 40 patients with complete SOCRATES data on all three interviews.

At the 3-month interview 85.0% (n=34) of the sample who were included in the final study analyses were still engaged in treatment and 15.0% (n=6) were no longer in treatment (1 had completed treatment, 1 had been discharged from the service on disciplinary grounds, 4 had left against medical advice). At the 6-month follow-up 77.5% (n=31) were still in treatment. A total of 7.5% (n=3) had dropped out of treatment between the 3- and 6-month interviews (3 had left against medical advice), while another 7.5% (n=3) who had dropped out by the time of the 3-month interview had returned to treatment by the time of the 6-month interview (these 3 patients had left treatment against medical advice).

Figure 3.1: Flow diagram of patient progress through the phases of the research study




### 3.3.9 Assessment intervals

Patients were initially interviewed (intake interview) on a mean of 1.5 (s.d. 1.4) days after their first clinical appointment at the treatment service. The 3-month follow-up interview was conducted a mean interval of 100.8 days (s.d. 23.0) later. The 6-month follow-up interview was conducted a mean of 92.3 days (s.d. 36.5) after the 3-month interview.

### 3.3.10 Statistical analysis

Data were analysed using SPSS version 16 (SPSS, 2008). The frequencies programme was used to check for the presence of outliers and a normal distribution among the variables. All variables were screened for skewness and kurtosis following initial screening using histograms and basic computation as specified by Tabachnick and Fidell (2001).

These tests identified that the readiness scale scores and the frequency of substance use were not normally distributed. Logarithmic data transformations were performed on the skewed variables prior to analysis to create a more normal distribution, thereby maximising the use of parametric tests of analysis. One outlier was identified within the waiting time variable – a waiting time of 110 days. As the outlier appeared to be part of an overall non-normal distribution of waiting times, this variable was also transformed logarithmically. This method of outlier management preserved the natural distribution of waiting times which occurred under normal clinical practice within the treatment service.

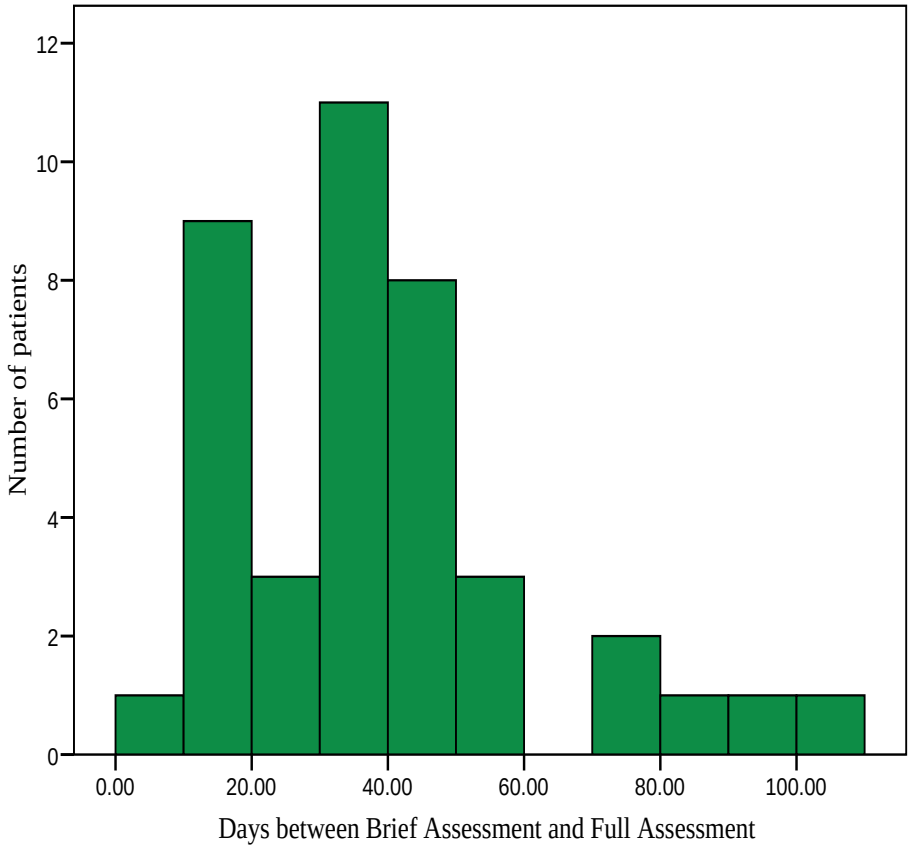
First, descriptive statistics were used to characterise the study sample, readiness scale scores and waiting times at the start of treatment. Pearson's correlations for parametric data and Spearman's correlations for non-parametric data were computed to assess the degree of association between readiness scale scores, waiting times and demographic and clinical characteristics of the sample. Repeated measures analyses of variance were used to examine changes in readiness between the three time points.

Since a number of multiple comparisons were conducted within the analyses, the Bonferroni Correction procedure was applied to control for the inflation of type 1 errors. This was set at an alpha level of 0.01. Test results before and after adjustment with the Bonferroni procedure will be presented. The advantages and disadvantages of adjusting the alpha value were discussed in Chapter 2.

### 3.3.11 Waiting times

The waiting period between Brief Assessment and Full Assessment was calculated for all patients included in the study. The mean waiting time between Brief Assessment and Full Assessment was 38.8 days (s.d. 22.9; CI=31.4 - 46.1), with a median of 36 days. The distribution of waiting times of the sample is presented in Figure 3.2.

Figure 3.2: Waiting time (days) between Brief Assessment and Full Assessment




### 3.3.12 Characteristics of the study sample

***Demographics***

The sample was comprised of 40 patients attending the service for the treatment of heroin dependence. The total sample had a mean age of 35.2 years (s.d.8.5; range 22-53 years) and was predominantly male (67.5%; n=27). With regards to ethnic origin, the

majority of the sample were white-British (85.0%; n=34). A further 2.5% (n=1) classified themselves as 'Black Other', 10.0% (n=4) were white European and 2.5% (n=1) were Irish. Of the 37 patients who reported their employment status, the majority (73.0%; n=27) were unemployed or in receipt of long-term sickness benefits and 27.0% (n=10) were in paid part- or full-time employment. At the time of the intake research interview 8 patients (20.0%) reported that they were currently in a relationship and 32 (80.0%) were currently single.

***Substance use***

The study participants reported using heroin on a mean of 25.4 days (s.d.7.9) in the previous 30 days (range of 2-30 days) with 26 (65.0%) patients reporting daily heroin use. Patients reported consuming a mean of 0.6g of heroin (s.d.0.4) on a typical using day. The mean duration of heroin use in the sample was 3 years (s.d.3.8) with a range of 3 months to 15 years. The mean age of onset of heroin use was 21.7 years (s.d.6.9) with a range between the ages of 13 and 41 years.

Cannabis was the second most frequently reported drug used, with 25 patients (n=62.5%) using on a mean of 5.9 (s.d. 3.1) days in the previous 30 days. More than a third of the sample reported the use of crack cocaine (n=15; 37.5%) and 21 (52.5%) patients had used non-prescribed methadone in the previous 30 days. The majority of the sample (n=36; 90.0%) reported the use of more than one illicit drug, with a mean of 3.3 (s.d.1.4) types of drugs consumed. This figure ranged from 2 to 7 types of drugs consumed. Twenty-five (62.5%) patients reported that they had previously injected drugs, with 21 (52.5%) injecting in the preceding 30 days. Eighteen (45.0%) of those using intravenously reported doing so every day. Eight (20.0%) patients reported sharing injecting equipment in the previous 30 days. Fifteen (49.2%) patients reported a previous drug overdose, with 8 (20.0%) reporting between 2-4 previous overdoses.

Half the sample (n=20; 50.0%) reported alcohol use on 15.2 days (s.d.11.5) in the previous 30 days with a mean of 6.2 units (s.d.4.3) consumed per day. This ranged between 1.5 units to 18 units per day. Six (15.0%) reported daily alcohol use. Eleven patients (27.5%) reported engaging in heavy drinking (defined as consuming 6 or more units on a typical drinking day) in the previous 30 days.

***Treatment for substance use***

Twenty-nine (72.5%) patients reported having previous experience of substance abuse treatment. A total of 33 (82.5%) patients had previously received treatment for their heroin use, 4 (10.0%) for methadone use, 1 (2.5%) for benzodiazepine use and 1 (2.5%) for crack cocaine use. Previous treatment for alcohol problems were reported by 1 (2.5%) patient.

***Severity of Dependence***

Severity of Dependence was ascertained for heroin use at intake. The mean Severity of Dependence Scales (SDS) score was 11.9 (s.d.2.5) with a range of 7-15 (possible range=0-15). This mean score indicates that a proportion of the sample was experiencing a high level of heroin dependence.

***Physical and psychological health***

The patients demonstrated a mean physical health score of 17.9 (s.d.6.0) at treatment intake with a range between 6 and 31 (possible range = 0 - 40). The mean psychological health score was 18.3 (s.d.6.3) with a range between 1- 40. These results indicate that the patients were experiencing a number of physical and psychological health problems, but in the majority of cases these symptoms were not experienced on a regular basis.

***Readiness to change substance use behaviour***

Readiness to change scores assessed at the intake interview are presented in Table 3.1. The Recognition scale at intake had a mean score of 30.4 (s.d. 3.6), the Ambivalence scale had a mean score of 15.4 (s.d. 2.2) and the Taking Steps scale had a mean score of 32.6 (s.d. 4.7). Miller and Tonigan (1996) provided interpretative ranges (‘profiles’) for the scale scores based on 1,726 adults presenting for the treatment of alcohol problems in Project MATCH (Project MATCH Research Group, 1993). According to these ranges, the mean scores for all three readiness scales fall into the ‘medium’ range relative to people already presenting for alcohol treatment. This profile on the Recognition scale implies that many of the study participants entering treatment do not

fully recognise that they have a heroin use problem. For the other two scales, the 'medium' range represents a middle ground between wondering and not wondering if their heroin use is having an effect on themselves and others (Ambivalence scale) and making some positive changes in their heroin use, or expressing intentions to do so (Taking Steps scale).

Table 3.1: Descriptive analysis of readiness scale scores at intake interview

| | Recognition (n=40) | Ambivalence (n=40) | Taking steps (n=40) |
|---|---|---|---|
| Mean scale score (s.d) | 30.4 (3.6) | 15.4 (2.2) | 32.6 (4.7) |
| Confidence Interval (95%) | (29.2, 31.6) | (14.7, 16.8) | (31.1, 34.4) |
| Median | 30 | 15 | 32 |
| Range | 21-35 | 10-20 | 18-40 |

Possible ranges: Recognition 7 to 35, Ambivalence 4 to 20, and Taking Steps 8 to 40.

Statistically significant positive correlations were found between the three readiness scales. The Recognition scale was positively correlated with the Ambivalence scale ($r = 0.56$, $p<0.01$) and the Taking Steps scale ($r = 0.74$, $p<0.01$). The Ambivalence scale was positively correlated with the Taking Steps scale ($r = 0.45$, $p<0.01$). The implications of these correlations will be addressed in Chapter 5.

To demonstrate the variability of scores within the sample all patients were grouped into three profiles based on their readiness scale scores at treatment intake. This provided groups of 'high', 'medium' and 'low' profiles. The figures presented in Table 3.2 demonstrate that nearly 60.0% of the sample had a Recognition score in the 'high' range indicating acknowledgement of their heroin use problems, while over a quarter (27.5%) of the sample were unaware that they had a heroin use problem. The remaining 15.0% of the sample had a score falling in the 'medium' range.

On the Ambivalence scale 60.0 % of the sample obtained scores within the 'medium' profile, 25.0% had 'high' scores which suggests uncertainty about changing their heroin use and 15.0% of the sample had 'low' Ambivalence scores which implies that they do not wonder whether they have a problem (this may be because they do not think they

have a problem or because they *know* that they have a problem and so do not need to wonder, Miller and Tonigan, 1996).

Table 3.2: Number of patients in each readiness profile at intake

| | Readiness profiles | | |
|---|---|---|---|
| | High n(%) | Medium n(%) | Low n(%) |
| Recognition | 23(57.5) | 6(15.0) | 11(27.5) |
| Ambivalence | 10(25.0) | 24(60.0) | 6(15.0) |
| Taking Steps | 9(22.5) | 18(45.0) | 13(32.5) |

Recognition: High ≥35, medium 31-34, Low ≤30, Ambivalence: High ≥17, Medium 14-16, Low ≤ 13, Taking Steps: High ≥36, Medium 31-35, Low ≤30.

The distribution of patient scores on the Taking Steps were more evenly distributed within the three readiness profiles than scores on the Recognition and Ambivalence scales. While 32.5% reported little activity, or intentions, to change their heroin use ('low' range), 22.5% endorsed a high number of intentions and behaviours designed to change ('high' range) and 45.0% of patients reported some activity to change ('medium' range).

## 3.4 RESULTS

Preliminary analyses were conducted to examine the relationships between a number of demographic and substance use variables and readiness to change assessed at treatment intake. These results are presented in Table 3.3 and 3.4. Pearson's and Spearman's correlations failed to reveal any statistically significant relationships between gender, physical and psychological health, relationship or employment status, and the readiness scales.

Table 3.3: Correlations between readiness to change scores and demographic characteristics at intake

| variable | Readiness scores | | |
|---|---|---|---|
| | Recognition r(p) | Ambivalence r(p) | Taking Steps r(p) |
| Age | -0.07 (0.68) | -0.04 (0.98) | -0.23 (0.19) |
| Physical health * | -0.09 (0.58) | 0.03 (0.86) | 0.01 (0.94) |
| Psychological health | -0.06 (0.71) | -0.22 (0.18) | -0.10 (0.52) |
| Gender | -0.03 (0.85) | -0.07 (0.68) | 0.05 (0.77) |
| Employment status | -0.05 (0.77) | 0.02 (0.89) | -0.11 (0.52) |
| Relationship status | -0.23 (0.19) | -0.33 (0.07) | -0.19 (0.28) |

*Physical and psychological health scores range from 0-40, with higher scores indicating a greater number of symptoms.

Only one of the substance use variables assessed at treatment intake showed a significant correlation with readiness scores. The Severity of Dependence Scale (SDS) for heroin use was positively correlated with the Ambivalence scores ($r = 0.39$, $p<0.05$), although this relationship failed to reach statistical significance once the Bonferroni Correction was applied. These results suggest that patients with more severe heroin use problems have greater conflict about changing their heroin use.

Table 3.4: Correlations between readiness scores and substance use variables assessed at intake

| variable | Readiness scores | | |
|---|---|---|---|
| | Recognition r(p) | Ambivalence r(p) | Taking Steps r(p) |
| Frequency of heroin use | 0.02 (0.89) | -0.21 (0.19) | -0.07 (0.65) |
| Quantity of heroin use | 0.17 (0.31) | -0.18 (0.27) | 0.04 (0.52) |
| Frequency of alcohol use | -0.02 (0.92) | -0.12 (0.46) | -0.14 (0.40) |
| Quantity of alcohol | 0.08 (0.73) | 0.18 (0.45) | 0.06 (0.80) |
| Frequency of crack cocaine use | 0.89 (0.59) | -0.14 (0.38) | -0.09 (0.60) |
| Quantity of crack cocaine use | -0.19 (0.51) | -0.11 (0.71) | 0.13 (0.67) |
| Heroin SDS* | 0.11 (0.51) | 0.39 (0.02) | -0.08 (0.65) |

*SDS (Severity of Dependence Scale) scores range between 0-15 with higher scores representing greater severity of substance misuse problems.

### 3.4.1 Changes in readiness over time

In order to examine whether the SOCRATES could detect changes in readiness over time, changes in readiness scores between treatment intake and the 3-month and 6-month follow-up interviews were examined. Repeated measures analyses of variance showed a statistically significant reduction in Recognition scores ($F = 10.32$, $p<0.01$) between the intake and 3-month interview. A reduction in Ambivalence scores during this period ($F = 5.65$, $p<0.05$) was also observed although this was not significant once the Bonferroni Correction was applied. No statistically significant changes on the Recognition or Taking Steps scales were found. Similarly, there were no significant changes on any of the three readiness scales between the 3-month and 6-month interviews, with scores remaining relatively static between these points (Table 3.5).

The magnitude of change on the readiness scales between the interviews can be determined by the effect size. At the 3-month follow-up small effect sizes were shown on all three scales: Recognition scale (0.3), Taking Steps scale (0.1), Ambivalence scale (0.2) according to Cohen's d (Cohen, 1992)[1]. Calculations for effect sizes showed no notable differences between the readiness scores between the 3- and 6-month interviews.

Table 3.5: Mean readiness to change scores at intake and follow-up

| | Intake mean score (s.d) | 3 month mean score (s.d) | 6 month mean score (s.d) | Change Intake/3 months, F (p) | Change 3/6 months, F (p) |
|---|---|---|---|---|---|
| Recognition | 30.4(3.6) | 28.3(4.2) | 27.7(4.5) | 10.32 (0.01)* | 1.08 (0.31) |
| Ambivalence | 15.4(2.2) | 14.3(2.6) | 14.6(2.8) | 5.65 (0.03) | 0.41 (0.52) |
| Taking Steps | 32.6(4.7) | 31.5(4.3) | 32.3(4.4) | 2.56 (0.12) | 1.18 (0.28) |

*significant after Bonferroni Correction.

[1]Cohen's *d* where 0.2 represents a small effect size, 0.5 a medium effect size and 0.8 a large effect size (Cohen , 1992).

**Exploratory analyses**

It was expected that scores on the Recognition scale would increase by the 3-month interview point, the absence of the predicted change therefore warranted further examination of the variables. Changes in readiness have been assessed using the group mean which masks both the variability of the direction of change in scores (e.g. that some may increase their score while others may reduce scores between the interview points) and also the amount of change among individuals. Table 3.6 shows the number of patients who increased their scores, whose scores remained static and whose scores decreased between the intake and 3-month follow-up on the three readiness scales.

Table 3.6: Changes in readiness scores between the intake and 3-month interviews

| Readiness scale | Increased score n(%) | Static n(%) | Decreased score n(%) |
|---|---|---|---|
| Recognition | 11(27.5) | 4(10.0) | 25(62.5) |
| Ambivalence | 8(20.0) | 4(10.0) | 28(70.0) |
| Taking Steps | 15(37.5) | 8(20.0) | 17(42.5) |

Case-by-case analysis revealed that while many patients (62.5%) decreased their Recognition scores between the intake and 3-month interview, over a quarter (27.5%) of increased their scores and 10.0% of the sample's scores did not change between the two interview points. On the Ambivalence scale the greatest proportion of patients (70.0%) decreased their scores, 10.0% did not change their scores and 20.0% increased their scores between the interviews. On the Taking Steps scale 42.5% of the patients decreased their scores, 20.0% did not change their scores and 37.5% increased their Taking Steps scores at follow-up.

An examination of changes in readiness scores between the 3- and 6-month interviews indicated that over half the patients (52.5%) showed a reduction in their Recognition scores, 22.5% remained static and 25.0% increased their scores. On the Ambivalence scale 47.5% of patients decreased their score, 22.5% remained static and 30.0% increased their score between the two interview points. On the Taking Steps scale

during this period 32.5% of the patients decreased their scores, 27.5% were unchanged and 40.0% increased their score. These figures are presented in Table 3.7.

Table 3.7: Changes in readiness scores between the 3-month and 6-month interviews

| Readiness scale | Increased score n(%) | Static n(%) | Decreased score n(%) |
|---|---|---|---|
| Recognition | 10(25.0) | 9(22.5) | 21(52.5) |
| Ambivalence | 12(30.0) | 9(22.5) | 19(47.5) |
| Taking Steps | 16(40.0) | 11(27.5) | 13(32.5) |

It must be noted that follow-up data was collected regardless of whether the patient was still engaged in treatment at the 3-month and 6-month follow-up points. The effect of the patients' treatment status on the study results will be addressed in the study discussion section.

### 3.4.2 Waiting times and readiness to change

A preliminary examination of the relationship between the length of the waiting period prior to treatment entry and readiness scores was conducted. Previous analyses examining the relationships between readiness scale scores and clinical characteristics of the sample revealed a positive correlation between the Ambivalence scale and the Severity of Dependence Scale scores. In order to control for the possible confounding effects of the severity of heroin dependence of the sample on the results, this variable was controlled for in the following analyses.

Pearson's correlational analyses revealed a positive association between scores on the Ambivalence scale and the number of days waited prior to treatment entry ($r = 0.31$, $p = 0.05$), although this failed to reach statistical significance once the Bonferroni Correction was applied. This result demonstrates that patients with longer waiting times reported greater conflict about reducing their heroin use (or those with shorter waiting times reported less conflict about changing their heroin use). No significant associations were found between waiting times and patient scores on the Recognition or Taking Steps scales (Table 3.8).

Table 3.8: Correlational analyses between readiness scores at intake and waiting time

| | Readiness scores | | |
|---|---|---|---|
| | Recognition r(p) | Ambivalence r(p) | Taking Steps r(p) |
| Waiting time (days) | -0.17 (0.29) | 0.31 (0.05) | -0.02 (0.92) |

These analyses were repeated to examine the possible associations between the length of the waiting period and readiness scale scores at the 3- and 6-month follow-up interviews. No statistically significant associations between waiting time and readiness scores at the follow-up points were found (Tables 3.9 and 3.10).

Table 3.9: Correlational analyses between readiness scores at 3 months and waiting time

| | Readiness scores | | |
|---|---|---|---|
| | Recognition r(p) | Ambivalence r(p) | Taking Steps r(p) |
| Waiting time (days) | -0.12(0.45) | -0.11(0.52) | 0.11(0.50) |

Table 3.10: Correlational analyses between readiness scores at 6 months and waiting time

| | Readiness scores | | |
|---|---|---|---|
| | Recognition r(p) | Ambivalence r(p) | Taking Steps r(p) |
| Waiting time (days) | -0.24(0.14) | -0.25(0.12) | -0.20(0.22) |

### 3.4.3 Summary of Study 1 findings

- The SOCRATES revealed a reduction in patient scores on the Recognition and Ambivalence scales between the intake and 3-month interviews.

- SOCRATES scores remained relatively static between the 3- and 6-month interviews.

- A positive correlation was found between intake Ambivalence scores and waiting time, demonstrating that patients with longer waiting times reported greater conflict around reducing their heroin use (non-significant after Bonferroni Correction).

- No associations were found between waiting times and the Recognition or Taking Steps scales.

## 3.5 DISCUSSION

This section of thesis discusses the findings from the analyses of Study 1. It will report on the utility of the SOCRATES in assessing readiness to change over time, and the preliminary examination of the relationship between waiting times and readiness to change heroin use.

### 3.5.1 Readiness to change at treatment entry

According to the readiness profiles suggested by Miller and Tonigan (1996), mean readiness scores of patients entering treatment fell within the 'medium' profile on the Recognition, Ambivalence and Taking Steps scales relative to alcohol users entering treatment in the Project MATCH samples (Project Match Research Group, 1993). The mean readiness profiles reported in the current study are comparable with those obtained by Gossop et al (2007) among a sample of drug users starting a new treatment episode at residential and community treatment settings in the UK.

The Recognition scores in the current study demonstrate that while a proportion of the heroin users entering treatment are able to acknowledge that they have a heroin use problem, others deny that their heroin use is causing them serious problems and do not express a desire for change. While medium, or low, Recognition may be expected among heroin users mandated into treatment by the courts, it is less expected among voluntary participants at the start of treatment. Such a finding suggests that treatment entry may not be entirely voluntary among a proportion of the sample and that coercion to enter treatment may have originated from other sources such as pressure from the workplace, social networks and welfare services. This lack of recognition of their heroin use problems may be related to the concept of denial, a common characteristic among drug users (Li et al, 2011; Rapp et al, 2006). Denial has been defined as a person's way of coping with a painful situation. By denying the existence of a problem, a person does not have to deal with it or assume any responsibility for it. Some of the heroin users may not fully recognise that they have a drug use problem as they believe they are still able to function effectively in some areas of their lives, or because they have avoided many of the negative consequences associated heroin use.

The trend in scores on the Ambivalence scale implies that patients are experiencing some uncertainty and conflict about their heroin use. Ambivalence has been described as a natural part of the process of change (Miller and Rollnick, 2002; Prochaska and DiClemente, 1992) and represents conflicting intentions, with individuals weighing up the pros and cons of changing their drug use. At the start of treatment many patients may have some desire to cut back or stop their drug use, but the temptation to continue may also be very strong because of their psychological or physical dependence to heroin. Initiating change is often associated with the fear of failing which many contribute to their ambivalence about change. This may also be confounded by the feelings of trepidation treatment seekers may experience about being in a new environment and exposing their problems to a drugs counsellor.

Nearly half of the sample reported Taking Steps scores in the 'medium' profile at intake. This indicates that a proportion of the sample are preparing, or starting, to make some changes in their heroin use, such as cutting down the frequency or quantity of their use. The fact that many are able to make changes prior to treatment is a positive finding. However, a proportion of the sample reported little activity to change their behaviour. Reducing heroin use may be too difficult for some without the assistance of formal treatment. Others may not see the need to initiate change prior to treatment as they know they will soon be in receipt of substitute medication which they anticipate will make changing their heroin use easier.

Case-by-case analyses found substantial variability in readiness profiles (high/medium/low) at treatment entry. Over half of the sample scored within the 'high' range on the Recognition scale, 25.0% per cent scored 'high' on the Ambivalence scale and 22.5% 'high' on the Taking Steps scale. A further 27.5% scored 'low' on the Recognition scale, 15.0% 'low' on the Ambivalence scale and 32.5% of the sample scored 'low' on the Taking Steps scale. The variability in readiness scores among the sample at the start of treatment highlights the importance of recognising that drug users enter treatment with different levels of motivation. This supports previous research which has demonstrated that those who express an interest in treatment may not all be highly motivated to change their drug use (Battjes et al, 1999). Although this may seem contradictory, a number of investigators have highlighted the distinction between readiness for treatment and readiness to change. Readiness to change has been

conceptualised as a combination of the individual's perceived importance of the problem and confidence in their ability to change. Readiness for treatment focuses on motivation to seek help, preparedness to engage in treatment activities and how they impact on the individual's attendance, compliance and outcome. Substance users may participate in treatment but may not be ready to take action to change their behaviour. Measures which have assessed readiness to change along with readiness for treatment among alcohol-dependent outpatients found a number of patients scored high on readiness for treatment and low on readiness for change and vice versa (DiClemente, 1999).

### 3.5.2 Changes in readiness over time

Given that the Transtheoretical Model aims to depict the process of how people change over time, it is important that the model demonstrates actual changes in readiness rather than inferring changes from the behaviours it is intended to predict, such as levels of substance use or treatment retention (Cahill et al, 2003; Miller, 1985). The use of the Pilot Study in the research programme was to test the capability of the SOCRATES in detecting change in readiness over time among heroin users in order to reliably assess the relationships between readiness to change and waiting times examined in Study 2. The current study compared readiness scores of heroin users at three time points in order to examine changes in readiness during a six-month period following treatment entry. Statistically significant reductions on the Recognition and Ambivalence scales between treatment entry and the three-month follow-up were found, while scale scores remained relatively unchanged between the three and six-month follow-up interviews. There were no statistically significant changes on the Taking Steps scale at either of the follow-up periods.

Although the reduction in Recognition scores over the first three-month period may be evidence that the treatment programme did not heighten heroin users' awareness of their problems, it may alternatively suggest that there is less of a problem requiring recognition as time goes by, especially as improvements in heroin use are made. Factors in the treatment environment, such as the receipt of substitute medication and therapeutic involvement, as discussed in the Literature Review, may have led to reductions in heroin use in the first follow-up period examined, and hence less of a

problem to recognise. Even if actual changes in heroin use had not yet been made, the patients have still experienced some of the benefits of exposure to treatment, such as the stabilising effect that treatment provides for many. A reduction in Recognition over time may alternatively suggest that the heroin users do not perceive their problems to be as serious as when they entered treatment because of the circumstances surrounding their treatment seeking. Previous research has found that drug users often present to treatment during a period of crisis (Prochaska et al, 1992; Weisner, 1990) (e.g. financial, health or relationship problems) when they feel a pressing need for help with their problems. It may be that this crisis subsides during the passage of time, altering their perception and awareness of their problems or their need to change.

The reported reductions in Ambivalence scores in the first three months appears to be a positive finding, with heroin users experiencing less conflict and uncertainty about their heroin use as time goes by. One of the roles of counselling during treatment is to assist the patient to reduce the conflict associated with changing their drug use (Miller and Rollnick, 2002). After three months of therapeutic engagement patients may have already weighed up the pros and cons of their heroin use and have decided that their desire for change is greater than their desire to continue using drugs. Experiencing positive changes to their heroin use through the treatment process may also assist in reducing this conflict.

The absence of statistically significant changes on the Taking Steps scale at the three-month follow-up indicates that heroin users are not engaging in more behaviours designed to change their heroin use than those reported at the start of treatment. This is an unexpected finding but may suggest that once heroin users have made substantial improvements in their heroin use, they may not believe that further action on their part is necessary. Although the SOCRATES was originally developed on alcohol in-patient samples, it fails to recognise that attending treatment is an action engaged in to change drug use. Each time a drug user attends a counselling session or consumes substitute medication they are making a conscious decision to change their heroin use. Failure to address action associated with attending treatment may represent an omission of the SOCRATES. However, others have suggested that the assessment of motivation may be confounded when medication is prescribed, as much of the activity associated with changing heroin use is the result of taking substitute medication (Belding et al, 1995).

Such a contention would question the relevance of the use SOCRATES for treatment samples in receipt of substitute medication. It remains to be determined whether the same change processes occur in drug users who use pharmacological agents to alter their drug use as those who change without such assistance. Further research would be useful to determine the extent to which heroin users receiving substitute medication perceive themselves as actively involved in the change process.

The absence of changes in readiness between the three- and six-month interviews may demonstrate that once patients are successfully engaged in treatment, motivation to change ceases to be an important factor in the process of recovery. It may be that motivation is only important during the early stages of change where will power and determination are required. What happens during treatment, such as therapeutic relationships formed and substitute medication prescribed, may be more important than motivation to change. Changes in readiness at three months but an absence of changes after this period may be a reflection of the early improvements made to heroin use. A number of previous studies have found substantial improvements in substance use are made within the first few months of treatment (Strang et al, 1997). Strain et al (1993), for example, found that the most marked reductions in drug use and other problem behaviours tended to occur within the first month of treatment, with problem levels remaining relatively unchanged during the subsequent four months. Cacciola et al (1998) also reported significant improvement in a number of outcome areas after two months with no further improvements between three and seven months. As the relationship between readiness to change and substance use outcomes was not assessed within the current study it is not possible to determine whether the changes in readiness were associated with corresponding changes to heroin use. The absence of changes in readiness after three months may alternatively indicate that motivation for change naturally plateaus after a period of time regardless of treatment involvement.

It must be noted that a number of patients included in the study analyses were not engaged in treatment for the entire duration of the study period. A total of eight patients dropped out of treatment during the study period and one completed treatment. A further three patients dropped-out of treatment prior to the three-month interview but returned by the six-month interview. The majority of patients who dropped out of treatment did so against medical advice. Although these figures are too small to perform

statistical analyses on, or compare with patients who remained in treatment for the duration of the study, it must be acknowledged that the reasons for changes in readiness among patients who dropped out of treatment may be different to those engaged in treatment. Reductions on the Recognition scale among patients who discontinued treatment may be due to them feeling that they do not have a heroin use problem serious enough to warrant treatment. Reductions on the Recognition scale may also be related to reductions on the Ambivalence scale. The authors of the SOCRATES state "that a person may score low in Ambivalence either because they "know" their drug use is causing problems (high Recognition) or because they "know" that they do not have drug use problems (low Recognition). Lowered Recognition and lowered Ambivalence in the current sample may indicate that the sample know that they do not have drug use problems, whether this is due to changes already made in drug use or to a lack of awareness of their problems is unknown. Further qualitative assessment would be useful to clarify how patients feel about their drug problems. This aspect of the SOCRATES will be discussed in Chapter 5.

Examination of sub-groups representing different patterns of change in readiness at follow-up revealed that while over 70.0% of the sample reduced or did not change their Recognition scores between the intake and three-month interview, nearly 30.0% increased their scores. A similar pattern of changes emerged on the Ambivalence scale, with the greatest proportion of patients decreasing (70.0%) or maintaining (10.0%) their scores and 20.0% increasing their scores. On the Taking Steps scale over 60.0% of patients decreased or did not change their scores, and nearly 40.0% increased their scores at follow-up. Variability in the direction of change was also observed between the three- and six-month interviews. This pattern of change over time, with some patients' scores increasing and some decreasing on the different dimensions of readiness, is supported by previous studies which have found motivation levels are likely to fluctuate over time, and that motivation for change may decrease in some over the course of treatment (Hiller et al, 2002; Norman et al, 1998).

### 3.5.3 Waiting times and readiness to change

An examination of the waiting times of the sample found wide variations in the length of delay heroin users experience prior to receiving treatment. The sample waited a mean

of 38.3 days to start treatment, although 40.0% of the sample waited considerably longer than this, up to a maximum of 110 days. A preliminary investigation of the relationship between the length of the waiting period and readiness scores revealed a positive association between waiting times and Ambivalence scores, although this association failed to reach significance once the Bonferroni Correction was applied to deal with the testing of multiple measures. No associations were found between waiting times and scores on the Recognition and Taking Steps scales.

This positive association between waiting times and Ambivalence scores indicates that longer delays for treatment are related to greater conflict and uncertainty about changing heroin use. High scorers on the Ambivalence scale, according to the authors of the SOCRATES, say that they sometimes wonder if they are in control of their substance use, are taking too many substances and are hurting other people, and /or are addicts. Lengthier waiting periods may provide the patients with greater time to question the pros and cons of their drug use and potential behaviour change, and they may decide that they do not have a problem great enough to warrant change. These explanations are speculative as the retrospective design of the study did not permit an examination of how readiness changed over the waiting period and whether these levels of Ambivalence were present prior to treatment entry. Also, the results are drawn from correlational data and so have to be regarded as weak as it cannot be concluded that one variable causes a change in another. The correlation found may be due to the influences of 'other' variables. There may be a number of other factors present during the waiting period, or within the patient (e.g. substance use variables, availability of social support) which impacts on readiness assessed at treatment intake.

The absence of significant associations between waiting times and two of the three readiness scales demonstrates that the length of the waiting period had little impact on problem recognition or on the activity concerned with changing heroin use, at least when assessed by the SOCRATES. The absence of significant relationships may suggest that the heroin users who successfully entered treatment after the waiting period possess certain individual characteristics which make them tolerant of the wait for treatment regardless of their motivation levels, or the length of delay. Further research examining a greater range of individual or clinical variables is necessary to identify these possible characteristics.

The absence of significant relationships between waiting times and the Recognition or Ambivalence scales may alternatively suggest that the SOCRATES is not capable of detecting subtle relationships between the variables under investigation. The SOCRATES was originally developed to be used on alcohol in-patient samples and therefore may not be sensitive enough to fully capture all the aspects of motivation among drug users. Further studies examining the use of the SOCRATES among drug use samples is therefore needed to test such a proposition.

The Pilot Study was also employed to test a number of other research measures to be used in Study 2. Pre-testing assessed the acceptability of the structured interview to the patient group and provided the researcher with an opportunity to practice administering the interview schedule. During and after the interview the patients were asked to comment on the length and the content of the interview, including any questions which they found difficult to understand. Piloting identified some items on the interview which needed to be slightly revised. For example, several participants commented that the interview appeared to repeat questions which they had previously answered. This problem was removed by changes to the sequence of the interview questions, with questions pertaining to similar areas (e.g. Drug Use Grid and Severity of Dependence Scale) grouped together to provide a more logical flow and enable the patients to see that the questions asked about different aspects of the same subject area. The majority of the sample concluded that the length of the interview was an appropriate duration. Overall the interview appeared to be acceptable to the sample of treatment patients.

### 3.5.4 Summary of Study 1

Although the SOCRATES has previously been used on drug samples (e.g. Gossop et al, 2007; Burrow-Sanchez and Lundberg, 2007), no studies, known to the author, have examined readiness at more than one time point to assess how readiness alters over time or in response to different situations such as treatment involvement. The results reported fulfilled the main objective of the Pilot Study which was to assess whether the SOCRATES could detect changes in readiness over time within a sample of heroin users seeking treatment. Although the observed changes in readiness were not large in magnitude, the SOCRATES identified statistically significant changes on the Recognition and Ambivalence scales during the first three months of the study. The

findings demonstrate that people with drug problems who seek or participate in treatment differ significantly in their levels of readiness to change and that this readiness changes over time and in different directions.

The preliminary investigation of the relationship between treatment waiting times and readiness to change found that longer waiting periods were associated with increased Ambivalence scores, although no relationships were evident on the Recognition or Taking Steps scales. The findings of the current study are insufficient to provide conclusions concerning the impact of waiting times on readiness to change heroin use. The limitations of the current study and the clinical implications of the findings will be addressed in Chapter 5.

This study assessed the readiness to change of a group of heroin users starting a new treatment episode. Heroin users assigned to the waiting list but who failed to enter treatment once a place became available were not included in the sample. Heroin users who successfully enter treatment may be different from those who do not enter treatment on a number of dimensions, including readiness to change. This design omission will be addressed within the second study which will assess the relationship between the length of the waiting period and readiness to change in a sample of heroin users assigned to a waiting list prior to entering treatment. The study will utilise a larger sample of heroin users and prospectively examine changes in readiness between the start and end of the waiting period. These changes in readiness will be examined as a function of the length of the waiting period. As the study specifically examines the waiting period, heroin users who successfully enter treatment at the end of the waiting period and those who fail to enter treatment will be included in the study to provide a more representative sample of treatment-seeking heroin users.

# CHAPTER 4: STUDY 2

## 4.1 INTRODUCTION

The research literature concerning substance abuse treatment waiting times has primarily focused on the relationship between waiting times and treatment entry, with studies generally finding that attendance rates decline as waiting time increases (Rees and Farmer, 1985; Leigh et al, 1984). As outlined in Chapter 1, it has been suggested that asking substance users to wait before entering treatment may diminish motivation (Stevens et al, 2008; Schwartz et al, 2006) which may lead to less interest in entering treatment and making changes to substance use behaviours. Despite its potential clinical utility, there is a paucity of research which examines the motivation of heroin users awaiting treatment entry, or the relationship of motivation during the waiting period to key treatment events such as treatment entry, or to clinical variables such as substance use during this period.

Identifying factors that affect an individual's motivation is an important goal in substance abuse treatment research and can help guide the development of more targeted substance abuse interventions. Understanding how motivation changes among heroin users seeking treatment, and how this is related to treatment characteristics such as waiting times, is of clinical value as many treatment characteristics are amenable to change. If reducing treatment waiting times would serve to maintain or strengthen patients' readiness to change their drug use then this is clearly an important first step in encouraging substance users to engage in treatment and ultimately increase the effectiveness of treatment.

The pilot study afforded a preliminary examination of readiness to change in a small sample of heroin users in the first few months of treatment, after naturally occurring waiting times. The design of the study only permitted a retrospective analysis of the relationship between waiting times and readiness to change, and only among those heroin users who successfully entered treatment after the waiting period. The study failed to find strong support for a relationship between waiting times and readiness to change. Study 2 focuses on heroin users awaiting entry into methadone treatment. It prospectively examines the time-sensitive relationships between two modes of treatment

entry (short waiting period/prolonged waiting period) and changes in readiness over the waiting period. The study also examines whether these variables are associated with the likelihood of treatment entry after the waiting period and changes in substance use during this time.

## 4.2 RESEARCH QUESTIONS AND OBJECTIVES

The following section will describe the objectives of Study 2.

The conceptual framework for this study was presented in Chapter 1 and is based on the hypothesis that the relationship between treatment waiting times and the likelihood of treatment entry is mediated by readiness to change heroin use. It is proposed that lengthy waiting periods between initial requests for treatment and scheduled treatment entry will result in diminished readiness to change, and that these reductions will be related to lower rates of treatment entry and fewer changes in patterns of patients' substance use over this period. This study will examine the different proposed relationships within the conceptual framework.

**Objective 1: To examine the relationship between waiting times and readiness to change heroin use.**

Objective 1 examines how readiness to change alters over the course of the waiting period among a sample of heroin users randomly allocated to two treatment-entry conditions which represent short and more prolonged waiting periods. The demographic and clinical characteristics which differentiate heroin users who report changes in their readiness over the waiting period from those who do not will be also examined.

*Hypothesis 1: Heroin users with longer waiting times prior to the start of treatment will demonstrate greater reductions in readiness to change than those with shorter waiting times.*

*Hypothesis 2: Waiting times will be more strongly associated with changes in readiness scores over the waiting period than baseline demographic or clinical characteristics.*

**Objective 2: To examine the relationships between readiness to change, waiting times and successful treatment entry.**

Objective 2 will examine whether the length of the waiting period prior to scheduled treatment entry and/or readiness levels are related to the likelihood of treatment entry once a treatment place becomes available.

*Hypothesis 3: Longer waiting times will be associated with lower rates of treatment entry.*

*Hypothesis 4: Readiness to change will be a stronger predictor of treatment entry status than demographic or substance use variables.*

**Objective 3: To examine the relationships between waiting times, readiness to change and substance use.**

Objective 3 will examine how substance use behaviours (e.g. frequency of heroin use) change over the waiting period and whether this change is related to the length of the waiting period and/or to the readiness levels of the waiting list participants.

*Hypothesis 5: Longer waiting times will be associated with fewer reductions in substance use over the waiting period compared to shorter waiting times.*

*Hypothesis 6: Increases in readiness scores over the waiting period will be associated with a reduction in heroin use over the same period.*

*Hypothesis 7: Reductions in the frequency of heroin use over the waiting period will be associated with high baseline readiness scores.*

**Objective 4: To examine the relationship between waiting time expectations, readiness to change and treatment entry.**

Objective 4 will examine the discrepancy between the expected length of the waiting period and the actual length of the waiting period. The relationships between this

discrepancy in waiting times and the likelihood of treatment entry will be examined along with the impact of this discrepancy on readiness levels over the waiting period.

*Hypothesis 8: Heroin users' expectations about the length of the waiting period will be associated with the likelihood of treatment entry.*

*Hypothesis 9: Heroin users' expectations about the length of the waiting period will be associated with changes in readiness scores over this period.*

## 4.3 METHOD

### 4.3.1 Study design

A prospective mixed-groups longitudinal design was chosen for the second study. The design utilises two treatment-entry conditions to assess the relationships between waiting times, readiness to change and a number of patient factors. Study participants were randomly assigned to a short (*Accelerated treatment-entry*) or more prolonged (S*tandard treatment-entry*) waiting period prior to the start of treatment. Readiness to change scores at the start and end of the waiting period were compared within, and between, the two treatment-entry groups to assess whether readiness levels change according to the length of the waiting period experienced.

Data for the study was collected as part of a larger study examining waiting times as part of a Drug Misuse Research Initiative funded by the Department of Health (described in more detail in Ridge et al, 2002, Appendix 10). The larger study followed a sample of 182 heroin users through the waiting period and focused on the effects of treatment delay on the likelihood of treatment entry after the waiting period, treatment retention and patient behaviours (e.g. substance use, offending) over this time. The purpose of this study was to consider the potential benefit of reducing waiting times in UK drug treatment services. The current study focuses specifically on the waiting period prior to treatment entry and will not involve the treatment phase.

As the larger waiting list study focused on the relationship between the length of the waiting period and the likelihood of treatment entry it was decided to use a randomised

design to allocate study participants to a short or more prolonged waiting period prior to the start of treatment. The purpose of the random allocation was to ensure that patient factors (e.g. gender, levels of heroin use) were balanced between the two treatment-entry groups so that differences in the outcomes observed between the groups were the result of the study conditions and not individual differences between the participants.

It was decided to compare patients who received expedited treatment entry approximately 14 days after their first clinical presentation at the service, with patients whose treatment was offered after a delayed period under the normal waiting list conditions operating within the treatment service. The choice of the 14-day waiting period was partly based on two previous studies which found that waiting periods of 2 weeks or less were associated with increased attendance rates. Dennis et al (1994) reported an increase in the number of patients that kept intake appointments in a methadone programme when the waiting period was reduced from 40 days to 14 days, while Fleming and Lewis (1987) reported that waiting time of more than 2 weeks increased non-attendance at an out-patient alcohol clinic. Although a number of earlier studies with out-patient samples reported that waiting periods greater than eight days reduced the probability of initial attendance (Hyslop and Kershaw, 1981; Wanberg and Jones, 1973) the treatment service used in the current study insisted that a 2-week period after the initial assessment was required for clinical information to be collected from referrers and clinical decisions to be made about treatment provided within the service.

### 4.3.2 Power calculation to determine sample size

As there are no previous published studies assessing the relationship between waiting times and changes in motivation, a small effect size (0.3) was selected to test the main study hypothesis predicting greater changes in readiness among the Accelerated group relative to the Standard group. Entering this effect size into a statistical software programme (GPower), indicated that a sample size of at least 72 participants would be required to demonstrate differences in treatment-entry group means at follow-up. Test significance = 0.05, groups = 2, number of repetitions = 2 with 80% power. It was anticipated that a number of participants would have incomplete SOCRATES data or would fail to complete a follow-up interview, because of these concerns all participants

recruited to the larger cohort study, and who fulfilled the inclusion criteria for statistical analyses, were included in the current study.

### 4.3.3 Sample

The sample for the current study comprised 133 treatment seekers attending an initial assessment at the community drug treatment service which forms part of the Addictions Directorate of the South London and Maudsley NHS Trust. A total of 49 patients recruited to the larger study did not meet the inclusion criteria for the current study (see Figure 4.1). As detailed in Chapter 2, the drug clinics within the service provide community-based reduction and maintenance programmes primarily for individuals seeking help for opiate dependence and provides substitute and maintenance prescribing and counselling following a Harm Reduction Model. The recruited sample were all seeking treatment for heroin dependence problems over a 19-month period.

### 4.3.4 Inclusion/exclusion criteria

Inclusion criteria for the current study included –

(1) Heroin users presenting to the service with a primary heroin dependence problem requesting out-patient treatment,
(2) Heroin users reporting heroin use in the 30 days prior to first contact with the clinic,
(3) Heroin users aged between 18 and 65 years, and
(4) Heroin users fluent in the English language.

Exclusion criteria for the study included –

(1) Heroin users who were currently prescribed substitute medication from another source (e.g. G.P.s) at the time of initial assessment at the treatment service. Many local G.P.s and other services provide short-term substitute prescriptions to heroin users until they can be accepted into formal treatment programmes. These individuals were excluded from the study to prevent the possible confounding influence of substitute medication on substance use behaviours and the likelihood of treatment entry after the waiting period.

(2) Heroin users considered to be of greater risk from the harms associated with heroin use were prioritised by the service to receive speedier access to treatment. These included pregnant drug users, drug users recently released from prison, sex workers, and those with risky injecting practices (e.g injecting in the groin or neck). These individuals were excluded from the study as random allocation to a treatment entry group was not possible.

(3) Heroin users identified as having learning disabilities, neurological disorders or reported intoxication at initial assessment by the treating clinicians were excluded from the study since all of these were likely to have an impact on heroin users' comprehension and completion of the research interview. The impact of these exclusion criteria on the results of the study will be addressed in Chapter 5.

### 4.3.5 Measures

***Instrument development***

A comprehensive set of data collection instruments was used to gather information for the 30-day period prior to the baseline interview. Key domains of behaviour taken from the Maudsley Addiction Profile (MAP; Marsden et al, 1998) included the assessment of substance use, physical and psychological health functioning, severity of substance use dependence and health risk behaviours. The Stages of Change, Readiness and Treatment Eagerness Scale (SOCRATES; Miller and Tonigan, 1996) was used to assess readiness to change heroin use among the sample. Details of these measures can be found in Chapter 2. As no instructions on to how to deal with incomplete SOCRATES data sets was provided by the authors, only participants who completed the measure without omitting any items were included in the study.

### 4.3.6 Research interviews

***Baseline interview***

In addition to the measures detailed above, further questions were used to collect demographic information (age, gender, accommodation, ethnicity and employment details). All information in the baseline interview referred to behaviours (e.g. substance use) during the previous 30 days. Participants were also questioned on how long they expected to wait for their treatment to start. Detailed locator information was also recorded at the baseline interview to ensure the collection of reliable follow-up data. This included both participant and next-of-kin details (Appendix 5).

***Follow-up interview***

The second structured research interview (Appendix 6) used the same measures as the baseline interview. Information in the follow-up interview concerned behaviours in the period between baseline interview and the date of scheduled treatment entry (start and end of the waiting period). Among the Accelerated treatment-entry group, the follow-up interview was conducted approximately 14 days after the baseline interview. Among the Standard group, this period varied according to the length of the waiting period.

***'Lost-to treatment' interview***

Study participants who failed to attend the Full Assessment appointment (and thus did not enter treatment) after the waiting period were located, where possible, and interviewed. The Lost-to-treatment interview assessed substance use, severity of drug dependence, physical and psychological health and readiness to change for the period of time since the last research interview was conducted. Additional items were included to assess heroin users' reasons for not starting treatment and an assessment of their future plans for reducing substance use (Appendix 7).

Lost-to-treatment interviews took place in locations mutually convenient to the participant and researcher (e.g. treatment service, patients' homes, local cafe). When the meeting took place at a venue other than the treatment service two researchers were

always present. For safety reasons, someone associated with the project was informed where the staff were going and when they expected to return. Several attempts to contact waiting list participants who failed to attend their Full Assessment were made. These attempts included phone calls to the patient and to the next of kin, letters and home visits.

### 4.3.7 Piloting the research interview

The structured interview to be used in the current study was piloted on a sample of 40 heroin users starting a new treatment episode within the same service used for the current study data collection. The purpose of the Pilot Study, detailed in Chapter 3, was to examine whether the chosen measure of motivation (SOCRATES) was capable of detecting changes in readiness over time in a sample of heroin users and also assessed the acceptability of the structured interview to the patient group. The SOCRATES was administered at three separate time points in a 6-month period after treatment entry. The results demonstrated that changes in readiness could be detected on the Recognition and Ambivalence scales over the first 3-month period studied. These results fulfilled the main acceptability criteria set within the Pilot Study and was therefore chosen as the measure of motivation for the current study. Piloting of the structured interview also indicated that the instrument was acceptable to the patient group in terms of the content and duration of the interview.

### 4.3.8 Procedure

The process of clinical assessment and treatment entry used within the service is detailed in Chapter 2. In summary, a heroin user attends the walk-in drug clinic and is assessed (Brief Assessment) by a drug counsellor or psychiatric nurse (key-worker). They are then referred to the appropriate clinic either within the treatment service (reduction or maintenance programmes) or to another more appropriate service to address their needs. Within the treatment service heroin users are placed on a waiting list until a treatment slot becomes available. At this point they are invited to the service for another, more detailed, clinical assessment (Full Assessment). This represents the start of treatment. Within a few days of this assessment they attend a three-day Dose Assessment procedure where a therapeutic dose of substitute medication is established.

Once engaged in treatment the heroin users receive weekly or fortnightly counselling sessions with a key-worker and are monitored with routine urinalysis to test for the presence of illicit drugs.

### 4.3.9 Participant recruitment

Heroin users presenting to the clinic and who fulfilled the inclusion criteria (as confirmed with the key-worker who conducted the initial clinical assessment) were approached by a researcher after the Brief Assessment and invited to participate in the study. Written informed consent was obtained from each heroin user who agreed to participate after the aims of the study and the data collection procedures had been fully explained (Appendix 4). They were informed that study participation was voluntary and refusal would not affect the treatment they received. Patients who had literacy problems had the study aims and objectives fully explained to them by a researcher.

### 4.3.10 Conducting the research interview

Each study participant was interviewed by an independent researcher not associated with the provision of treatment. Each structured interview lasted approximately forty minutes. The same researcher also conducted all follow-up interviews. A *baseline interview* was conducted with each participant after their initial clinical assessment at the treatment service (Brief Assessment). After this interview participants were randomly assigned to one of two treatment-entry groups (Standard or Accelerated) which will be detailed in the following section. Study participants who entered treatment at the end of the waiting period were interviewed for a second time (*follow-up interview*) straight after their Full Assessment appointment. If this was not possible, an appointment was made with them to complete the research interview within the following few days. Study participants who failed to attend the Full Assessment appointment were located, where possible, and interviewed.

### 4.3.11 Randomisation of the heroin users to the treatment-entry groups

All participants were randomly allocated to a treatment-entry group after the baseline interview had been conducted. The randomisation procedure was conducted by a researcher not involved in the study or with the clinical teams within the treatment service. The randomisation was achieved by generating random number lists on a computer using SPPS version 16. The randomisation was conducted in blocks to arrive at equal numbers of study participants in each treatment-entry group. The randomisation was conducted for the larger study cohort (n=182) which generated two groups of 91 participants.

The study participants were informed of their treatment-entry group allocation within several days of the first structured interview by a letter sent to their current address. Allocation concealment was not possible after the baseline interview as individuals randomised to the Accelerated treatment-entry group would be invited for a Full Assessment within 2 weeks of the baseline interview. No deviations from the randomised allocation occurred throughout the course of the study.

**Accelerated treatment-entry group:** Participants randomised to the Accelerated group were sent a letter with a date for a Full Assessment appointment within several days of their initial presentation at the service. The Full Assessment appointment was scheduled approximately 2 weeks after their initial presentation at the service. The follow-up research interview was conducted after the Full Assessment appointment. This interview was designed to measure behaviours over the short waiting period prior to the start of treatment.

**Standard treatment-entry group:** Participants randomised to the Standard group were placed on the clinic waiting list after the Brief Assessment and waited for a treatment slot to become available as would occur under normal conditions within the clinic. The Standard group were offered a Full Assessment appointment date as soon as a treatment place became available. This was typically between 4 and 12 weeks after the Brief Assessment. The follow-up research interview was conducted after this appointment.

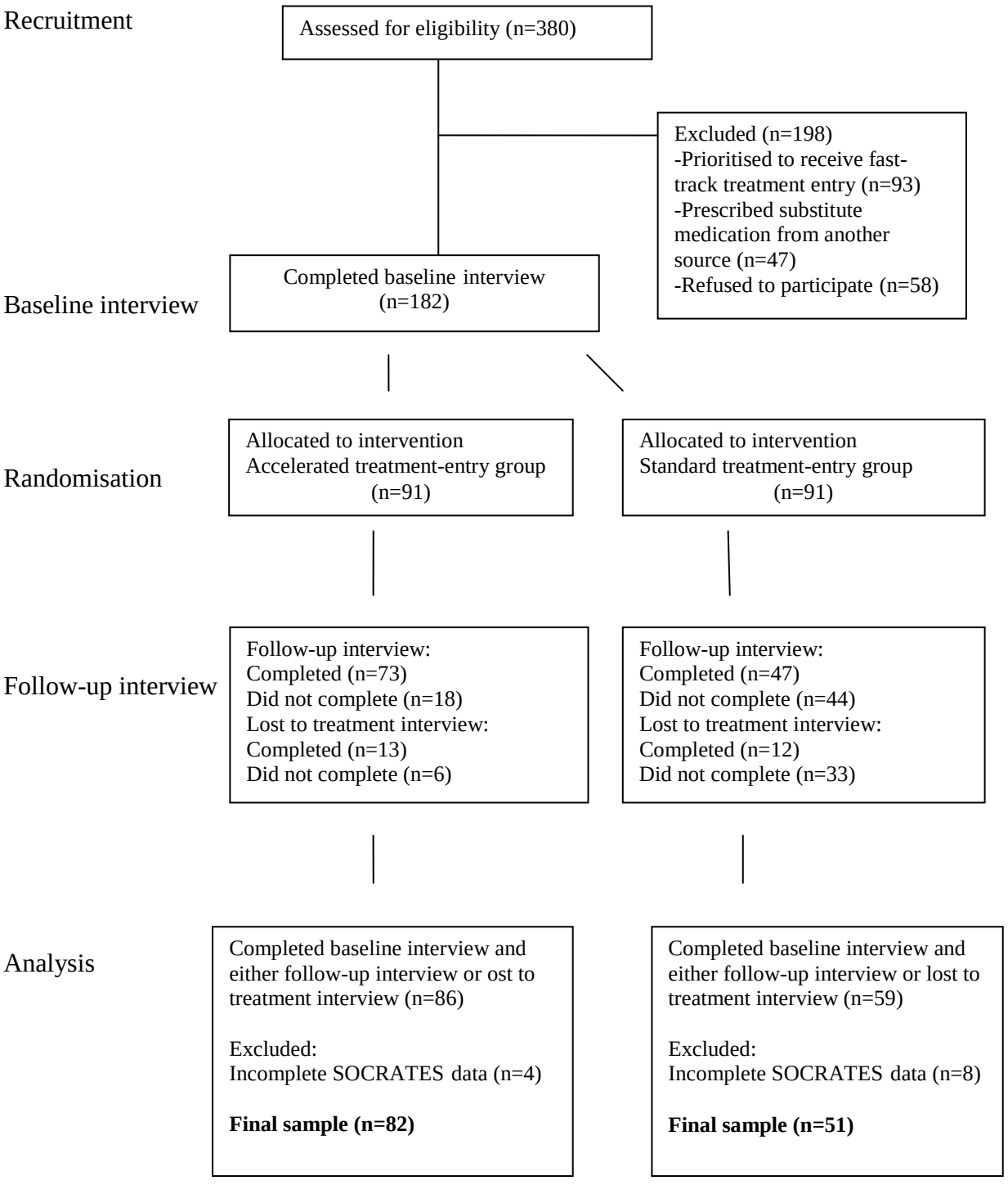
### 4.3.12 Participation rates

During the 19-month study recruitment period a total of 380 heroin users accessed the clinic. Of these, 93(24.5%) were prioritised by the clinic to receive fast-track treatment entry (pregnant drug users, sex-workers, those with risky injecting practices, recent release from prison) and 47 (12.4%) were currently prescribed substitute medication from another source. Both of these groups were excluded from the study. A further 58 (15.3%) heroin users refused to participate in the study at the time of recruitment. A total of 182 heroin users were successfully recruited to the larger cohort waiting list study funded by the Department of Health.

For the present study, 133 participants who completed both baseline and follow-up interviews or Lost-to-treatment interviews (among those who failed to enter treatment) and who had complete data on the SOCRATES were included in the study sample. This consisted of 51 participants randomised to the Standard group and 82 to the Accelerated group. A flow diagram of participant progress through the phases of the study is presented in Figure 4.1.

Although all heroin users seeking treatment at the service were approached, the majority of those consenting to study participation were allocated to the methadone reduction programme (n=128) after their initial clinical assessment rather than to the methadone maintenance programme (n=5). The reason for the discrepancy in programme allocation is unclear but may be the result of the prioritisation system existing within the service for heroin users at higher risk of drug-related harms (e.g. risky injecting practices, recent release from prison). It may be the case that the clinical teams felt that the needs of these heroin users would be better met within the methadone maintenance programme.

Figure 4.1: Flow diagram of patient progress through the phases of the research study



### 4.3.13 Data analysis

Data were analysed using SPSS version 16. All variables were screened for skewness and kurtosis following initial screening using scatterplots and basic computation as specified by Tabachnick and Fidell (2001). Heroin frequency assessed at the baseline interview failed tests of normal distribution (skewness = -2.14, kurtosis = 2.25) and the Kolmogorov-Smirnov test confirmed the data were not normally distributed ($p<0.001$). Frequency of non-prescribed methadone use at baseline was also not normally distributed (skewness = 2.53, kurtosis = 2.38, Kolmogorov-Smirnov <0.001). Logarithmic transformations reduced the skew of the distribution for non-prescribed methadone and heroin frequency, with a better approximation to the normality requirements of the statistical procedures employed. Raw scores are presented in all tables to aid interpretation.

Demographic and substance use characteristics of the study participants randomised to the Accelerated and Standard treatment-entry groups were compared with independent t-tests and chi-square tests. The distribution of waiting times experienced by each group is displayed in graphs.

Repeated measures analysis of variance compared changes in readiness over the waiting period (start of the waiting period/end of the waiting period) of the Standard and Accelerated treatment-entry groups. This allowed an examination of the actual change in readiness according to the length of the waiting period. Chi-square analyses compared the direction of changes in readiness (increased/ decreased/ stayed the same). GLM multivariate analysis of variance examined patient and clinical factors which differentiated heroin users who made changes in readiness over the waiting period to those who did not. Data reported as 'follow-up' combines information collected from the participants entering treatment after the waiting period (follow-up interview) and information collected from those who failed to enter treatment (Lost-to-treatment interview).

Chi-square analysis was used to compare the treatment entry rates of the Standard and Accelerated treatment-entry groups and independent t-tests examined the likelihood of treatment entry as a function of time waited (number of days). Analysis of the patient

and substance use variables associated with treatment entry was performed using chi-square tests for categorical data and independent t-tests for continuous variables. Variables significant at the bi-variate level were entered into separate logistic regression analyses to examine the variables which predicted treatment entry.

Repeated measures analysis of variance compared changes in substance use over the waiting period (start of the waiting period/end of the waiting period) of the Standard and Accelerated treatment-entry groups. This allowed an examination of the actual change in substance use according to the length of the waiting period. Chi-square analyses compared the direction of changes in substance use (increased/ decreased/ stayed the same). GLM repeated measures analysis of variance assessed the relationship between changes in readiness levels over the waiting period as a function of heroin frequency change groups (increased/ stayed the same/ decreased the frequency of heroin use) and GLM multivariate analysis of variance examined the patient and substance use factors which differentiated heroin users who made changes to their substance use over the waiting period to those who did not.

Follow-up interviews recorded information for the period between the two research interviews. This period was variable within and between the two treatment-entry groups. In order to make meaningful comparisons between the Standard and Accelerated groups, the frequency of substance use data (number of days used since the previous interview) were converted into 'days of use per week since the last interview'. Less than 18.0% of the sample reported the use of benzodiazepines, cocaine powder or amphetamines. These drugs will be excluded from the analyses.

Independent t-tests were used to compare the actual waiting times of those who entered treatment and those who did not according to the four expected waiting time categories of different durations. Analyses of variance (ANOVA) were conducted to assess whether demographic and substance use characteristics assessed at the baseline interview were associated with expectations of waiting time. GLM repeated measures of analysis compared the changes in readiness over the waiting period according to the expected and actual waiting time categories.

As a result of the need to conduct multiple comparisons for a number of measures, the Bonferroni Correction procedure was applied to control for the inflation of type 1 error rates. This was set at an alpha level of 0.01. Test results before and after adjustment with the Bonferroni method are presented. The advantages and disadvantages of adjusting the alpha level are discussed in Chapter 2.

The intake characteristics and waiting times of the present study sample (n=133) and of the remaining participants from the larger waiting list study cohort (n=49) were compared using logistic regression to see the extent to which the two study samples differed. Variables included in the analysis were: gender, age, frequency of heroin, non-prescribed methadone and crack cocaine use, injecting status, physical and psychological health scores. This model was significant ($\chi^2$= 26.93, p<0.01). The two groups differed on two variables. Heroin users from the larger cohort had higher physical health scores (18.1 vs 15.9; Wald= 5.39, p<0.05) and experienced a longer waiting period (47 days, s.d.= 24.5) compared to the study sample (30.8 days, s.d.24.9; Wald =14.32, p<0.01).

### 4.3.14 Characteristics of the study sample

A preliminary analysis of the data was conducted to describe the sample and compare the characteristics of participants randomised to the Standard and Accelerated treatment-entry groups. Chi-square tests were used to compare differences for categorical variables and independent t-tests for continuous variables. The results are presented in Tables 4.1 and 4.2.

Approximately three-quarters (75.9%) of the sample was male and 60.9% described themselves as 'White British'. The ages of the sample ranged from 19-54 years with a mean of 33.3 years (s.d. 7.9) Almost half of the sample had a partner (48.9%) and 22.6% had worked in the 30 days prior to seeking treatment at the service. Almost half (47.4%) had previously been imprisoned and a third (33.8%) reported committing a crime in the previous 30-day period. Study participants reported heroin use on a mean of 6.1 days per week (s.d.2.0). A total of 63.2% of the sample reported crack cocaine use, 31.6% reported the use of non-prescribed methadone, 55.6% reported cannabis use and 54.1% reported alcohol use in the previous 30 days. Almost half (45.1%) of the

sample reported current intravenous use of at least one drug and 69.2% of the sample had at least one previous episode of heroin treatment.

Table 4.1: Baseline demographic characteristics of the full sample and the treatment-entry groups

| Characteristic | Full sample (n=133) | Standard (n=51) | Accelerated (n=81) | $\chi^2$/t |
|---|---|---|---|---|
| Age | 33.3(s.d.7.9) | 32.1(s.d.7.2) | 33.3(s.d.8.2) | 0.96(0.34) |
| Gender: male | 101(75.9%) | 60(46.2%) | 61(49.4%) | 0.15(0.71) |
| Ethnicity: | | | | |
| White British | 81(60.9%) | 44(57.1%) | 53(65.4%) | 10.71(0.10) |
| European | 21(15.8%) | 16(20.8%) | 9(11.1%) | |
| Black British | 9(6.0%) | 5(6.5%) | 4(4.9%) | |
| African | 2(1.5%) | 1(1.3%) | 1(1.2%) | |
| Asian | 7(5.3%) | 5(6.5%) | 3(3.7%) | |
| Mixed | 7(5.3%) | 6(7.8%) | 4(4.9%) | |
| other | 7(5.3%) | - | 7(8.6%) | |
| Employed | 30(22.6%) | 14(18.2%) | 18(22.2%) | 0.40(0.56) |
| Current partner | 65(48.9%) | 39(50.6%) | 38(46.9%) | 0.22(0.75) |
| Previous imprisonment | 63(47.4%) | 30(39.0%) | 42(51.9%) | 2.65(0.11) |
| Crime (last 30 days) | 45(33.8%) | 28(36.4%) | 30(37.0%) | 0.01(1.00) |
| Physical health* | 15.9(s.d.7.7) | 15.4(s.d.7.5) | 16.9(s.d.7.9) | 1.24(0.22) |
| Psychological health | 16.8(s.d.8.4) | 14.2(s.d.7.6) | 5.2( s.d.8.5) | 1.20(0.18) |

*Physical and psychological health status assessed by the MAP. Scores range from 0-40 where higher scores represent a greater frequency of symptoms

The random assignment to the Standard and Accelerated groups produced two groups that closely resembled each other on demographic and clinical variables collected at the baseline interview. The Standard and Accelerated groups were comparable on ethnicity, gender, age, physical and psychological health, relationship status, crime and previous imprisonment (Table 4.1). The two groups reported similar substance use frequencies, Severity of Dependence scores and injecting status (Table 4.2).

Table 4.2: Baseline clinical characteristics of the full sample and the treatment-entry groups

| Characteristic | Full sample (n=133) | Standard (n=51) | Accelerated (n=82) | $\chi^2$/t |
|---|---|---|---|---|
| Heroin frequency* | 6.1(s.d.2.0) | 6.2(s.d.1.9) | 6.0(s.d.1.9) | 0.61(0.54) |
| Methadone use | 42(31.6%) | 15(29.4%) | 27(32.9%) | 0.18(0.67) |
| Methadone frequency | 3.6(s.d.5.2) | 3.8(s.d.5.0) | 3.5(s.d.5.1) | 0.21(0.30) |
| Crack cocaine use | 84(63.2%) | 33(64.7%) | 51(62.2%) | 0.85(0.77) |
| Crack cocaine frequency | 2.0(s.d.1.1) | 2.3(s.d.1.2) | 1.8(s.d.1.4) | 1.30(0.19) |
| Alcohol frequency | 1.7(s.d.1.1) | 1.9(s.d.1.3) | 1.5(s.d.0.9) | 1.02(0.31) |
| Cannabis use | 74 (55.6%) | 27(52.9%) | 47 (57.3%) | 0.24(0.38) |
| Heroin quantity | 0.5(s.d.0.4) | 0.5(s.d.0.41) | 0.5(s.d.0.4) | 0.22(0.83) |
| Crack cocaine quantity | 0.3(s.d.0.2) | 0.3(s.d.0.2) | 0.3(s.d.0.1) | 0.30(0.76) |
| Alcohol use | 72(54.1%) | 27(52.9%) | 45(54.9%) | 0.05(0.49) |
| Alcohol quantity | 3.8(s.d.2.1) | 3.9(s.d.1.7) | 4.0(s.d.2.0) | 0.39(0.72) |
| IV drug use | 60(45.1%) | 37(48.1%) | 38(46.9%) | 0.02(1.00) |
| Previous heroin treatment | 92(69.2%) | 52(67.5%) | 59(72.8%) | 0.53(0.49) |
| Heroin SDS** | 11.2(s.d.2.9) | 11.0(s.d.2.7) | 11.3(s.d.2.7) | 0.51(0.61) |

*****Frequency of substance use refers to days per week ** SDS (Severity of Dependence Scale) scores range between 0-15 with higher scores representing greater severity of heroin use.

### 4.3.15 Length of the waiting period prior to scheduled treatment entry

The mean waiting times of the full sample and the Standard and Accelerated groups were examined. The full sample waited a mean of 31.2 days (s.d. 26.0) between first contact with the treatment service and the scheduled treatment entry (range of 6 -116 days). Examining the treatment-entry groups separately, the Standard group waited a mean of 58.5 days (s.d. 23.4, range of 22-116 days) and the Accelerated group waited a mean of 14.2 days (s.d. 2.11, range of 6-21 days). Figure 4.2 and 4.3 displays the waiting times of study participants randomised to the Standard and Accelerated treatment-entry groups. Appendix 12 shows the frequency of individual waiting times of the two groups. The waiting times of the Standard group and the Accelerated group were significantly different ($t=14.43$, $p<0.001$).

Figure 4.2: Waiting time between first presentation at the treatment service and time of scheduled Full Assessment among the Standard group (outliers included).

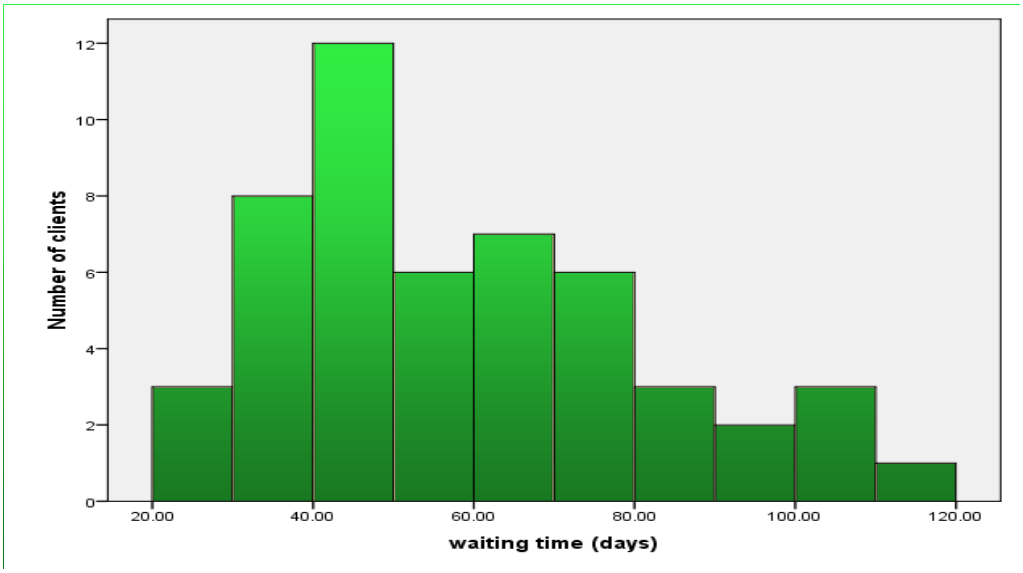
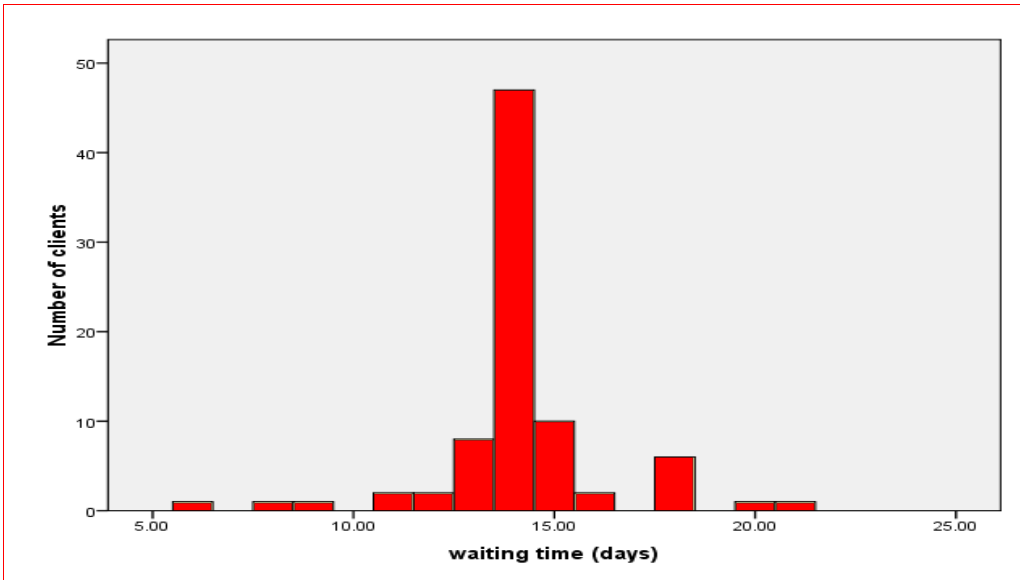



Figure 4.3. Waiting time between first presentation at the treatment service and time of scheduled Full Assessment among the Accelerated group.




Examination of the distribution of waiting times revealed 4 outliers: 105,106,108 and 116 days. One method for managing outliers is to replace the extreme scores with the preceding highest value (Tabachnick and Fidell, 2001). This value was 96 days. With the outliers removed the full sample waited a mean of 30.8 days (s.d.24.9) with a range of 6-96 days. Examining the treatment-entry groups separately (with the outliers

removed) the Standard group waited a mean of 57.5 days (s.d.21.4, range of 22-96 days) and the Accelerated group waited a mean of 14.2 days (s.d.2.11, range of 6-21 days).

### 4.3.16 Readiness to change at the baseline interview

Table 4.3 displays the readiness to change scores of the full sample at the baseline interview. According to the interpretive ranges[2] suggested by Miller and Tonigan (1996) the mean sample score on the Recognition scale was categorised as 'low' (mean of 30.4, s.d.3.4). The mean score on the Ambivalence scale (14.4, s.d.2.4) was classified as 'medium' and the mean score on the Taking Steps scale as 'low' (29.5, s.d.5.9).

Table 4.3: Descriptive analysis of readiness scores of the full sample at the baseline interview

| | Recognition (n=133) | Ambivalence (n=133) | Taking Steps (n=133) |
|---|---|---|---|
| Mean scale score (sd) | 30.4 (s.d.3.4) | 14.4 (s.d.2.4) | 29.5 (s.d.5.9) |
| Confidence Interval (95%) | (29.8, 30.9) | (14.0, 14.8) | (28.5, 30.5) |
| Median | 30 | 15 | 30 |
| Range | 21-35 | 9-20 | 10-40 |

Possible scale ranges: Recognition 7-35, Ambivalence 4-20, Taking Steps 8-40.

Statistically significant positive correlations were found between the Recognition and the Ambivalence scale scores ($r = 0.43$, $p<0.01$) and also between the Recognition and the Taking Steps scale scores ($r = 0.32$, $p<0.05$). There was no statistically significant correlations between the Ambivalence and Taking Steps scales ($r = 0.17$, $p = 0.22$). The implications of these correlations will be addressed in Chapter 5. Independent t-tests failed to detect any differences between the readiness scale scores of the Standard and Accelerated groups at the baseline interview (Table 4.4).

[2] Interpretive ranges are based on a sample of 1,726 adult men and women presenting for treatment for alcohol problems through Project MATCH (Project MATCH Research Group, 1993). Interpretive ranges are ranked as low, medium or high relative to this group of people.

Table 4.4: Baseline readiness scale scores of the Standard and Accelerated groups

| | Standard mean score (s.d) | Accelerated mean score (s.d) | t (st/ac) | p | CI (95%) |
|---|---|---|---|---|---|
| Recognition | 30.2(3.6) | 30.5(3.2) | 0.50 | 0.62 | -1.48, 0.88 |
| Ambivalence | 14.3(2.6) | 14.5(2.3) | 0.38 | 0.71 | -1.01, 0.69 |
| Taking Steps | 29.2(6.1) | 29.8(5.6) | 0.56 | 0.58 | -2.62, 1.46 |

Possible scale ranges: Recognition 7-35, Ambivalence 4-20, Taking Steps 8-40.

## 4.4 RESULTS

### 4.4.1 Changes in readiness over the waiting period

*Hypothesis 1: Heroin users with longer waiting times prior to the start of treatment will demonstrate greater reductions in readiness to change than those with shorter waiting times.*

Changes in readiness between the baseline interview and the follow-up interview (time of scheduled treatment entry) were examined using GLM repeated measures analysis of variance with the two interview points (baseline/follow-up) as the within-subjects factor and the treatment-entry group (Standard/Accelerated) as the between-subjects factor. These results are presented in Table 4.5.

*Recognition scale*: The mean scores of the Standard and Accelerated treatment-entry groups remained relatively static between the baseline and follow-up interviews ($F = 2.38$, d.f. = 1,131, $p = 0.44$) and no statistically significant interaction effects were found between group randomisation and changes in Recognition scores over time ($F = 1.26$, d.f .= 1,131 $p = 0.32$).

Table 4.5: Mean readiness to change scores at baseline and follow-up interviews

| | Standard (n=51) | | Accelerated (n=82) | | | |
|---|---|---|---|---|---|---|
| | Baseline mean score (s.d) | Follow-up mean score (s.d) | Baseline mean score (s.d) | Follow-up mean score (s.d) | F for change | F for treatment-entry group |
| Recognition | 30.2(3.3) | 29.4(3.9) | 30.5(3.2) | 30.3(3.4) | 2.38 | 1.26 |
| Ambivalence | 14.3(2.6) | 13.7(2.7) | 14.5(2.3) | 10.7(2.7) | 69.42** | 14.70* |
| Taking Steps | 29.2(6.1) | 28.8(6.0) | 29.8(5.6) | 23.1(4.7) | 47.15** | 9.26** |

Possible scale ranges: Recognition 7-35, Ambivalence 4-20, Taking Steps 8-40. *p<0.01, **p<0.001

*Ambivalence scale*: Both treatment-entry groups reported a mean reduction in Ambivalence scores between baseline and follow-up interviews ($F = 69.42$, d.f. = 1,131, $p<0.001$) with a statistically significant interaction effect between group randomisation and changes on the Ambivalence scale ($F = 14.70$, d.f. = 1,131, $p<0.01$). The Accelerated group reported a greater reduction in scores compared to the Standard group.

*Taking Steps scale*: Overall there was a reduction in scores on the Taking Steps scale between the baseline and follow-up interviews ($F = 47.15$, d.f =1,131, $p<0.001$). A significant interaction effect between treatment-entry group and changes on the scale over time was found ($F = 9.26$, d.f =1,131, $p<0.001$). The Accelerated group reported greater reductions in scores on the Taking Steps scale compared to the Standard group.

In terms of effect size (Cohen's *d*), the Standard treatment-entry group reported small reductions on the Recognition scale (0.3) and the Ambivalence scale (0.3) and no notable differences for scores on the Taking Steps scale (0.1). Within the Accelerated treatment-entry group no notable differences were found on the Recognition scale while large reductions were found on the Ambivalence (0.9) and Taking Steps (0.9) scales.

To summarise these findings, in terms of group means, the shorter waiting periods of the Accelerated group were associated with reduced scores on the Ambivalence and Taking Steps scales between the start and end of the waiting period. The longer waiting

periods experienced by the Standard group were not associated with changes on any of the readiness scales over the period examined.

**Exploratory analyses**

The purpose of the randomisation to the Standard and Accelerated treatment-entry groups was to create two groups with distinctively different waiting periods in order to compare the effects of these waiting periods on readiness to change. Due to some small variations in the waiting times of the Accelerated group, 20 waiting list participants experienced waiting times above 14 days, up to a maximum of 21 days (Appendix 11). Due to the naturally occurring waiting times of the Standard group, 3 waiting list participants waited a shorter duration than that which was expected (30 days or less, Appendix 10).

In order to minimise the impact of these waiting time anomalies within the statistical analyses, the relationship between waiting times and readiness scores was re-analysed with waiting time as a continuous variable (i.e. number of days waited for scheduled treatment entry) rather than a dichotomous variable (Standard/Accelerated treatment-entry groups). A change variable was also created for each readiness scale (readiness at baseline - readiness at follow-up).

It was also considered that managing outliers (those with waits more than 96 days days) in the waiting time variable with the mean substitution method may not have provided a true representation of the more prolonged waiting periods experienced by the heroin users. This method substitutes the longest waiting times experienced with a shorter waiting time to fit in with the normal distribution of waiting times within the sample. It was decided to logarithmically transform the waiting time variable in order to maintain the full waiting time data while at the same time stabilising the variance of the sample. Logarithmic transformations use the natural logs of the values of the analyses, rather than the original raw values and are commonly used for positive data. Box-plot analysis showed that this method successfully managed the outlying waiting time values. All future analyses examining the waiting period will use log transformed waiting times.

Table 4.6 present the results of the correlational analyses between readiness change scores between baseline and follow-up interviews and waiting time (days). Using a different method to examine the relationship between waiting times and changes in readiness over the waiting period did not reveal a different pattern of results to that reported for the separate Standard/Accelerated waiting times. Statistically significant positive correlations were found between the Ambivalence change score variable ($r = 0.43$, $p<0.001$) and Taking Steps change score variable ($r = 0.39$, $p<0.001$). No statistically significant correlation was found between waiting times and changes on the Recognition scale over the waiting period.

Table 4.6: Change in readiness scores between baseline and follow-up correlated with waiting times

| | Recognition r(p) | Ambivalence r(p) | Taking Steps r(p) |
|---|---|---|---|
| Waiting time (days) | -0.10(0.26) | 0.43(0.001) | 0.39(0.001) |

### 4.4.2 Changes in readiness scores at a case-by-case level

Inspection of readiness scores over the waiting period at a case-by-case level revealed variations in the pattern of changes between the baseline and follow-up interviews among the sample. The data was reanalysed to obtain three subgroups – (1) participants whose readiness scores decreased, (2) participants whose scores increased, and (3) participants whose scores did not change over the waiting period. Tables 4.7 to 4.9 display the number of waiting list participants whose readiness scores increased, decreased or stayed the same between baseline and follow-up interviews on each scale.

*Recognition scale*: The greatest proportion of the Standard (52.9%) and the Accelerated groups (41.5%) showed a reduction in Recognition scores between the baseline and follow-up interviews. Nearly a third of the Standard group (31.4%) and the Accelerated group (37.8%) increased their Recognition scores and a small proportion from each group did not change their scores (Standard =15.7%; Accelerated = 20.7%).Chi-square analysis found no statistically significant differences in the pattern of changes between the two treatment-entry groups on the Recognition scale ($\chi^2 = 1.70$, $p = 0.43$) (Table 4.7).

Table 4.7: Changes in Recognition scores between baseline and follow-up interviews

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n(%) | Accelerated n(%) | | |
| | | | | |
| increased | 16(31.4) | 31(37.8) | 1.70 | 0.43 |
| stayed the same | 8(15.7) | 17(20.7) | | |
| decreased | 27(52.9) | 34(41.5) | | |

*Ambivalence scale:* The majority of the Accelerated group (85.4%) reported reductions on the Ambivalence scale between baseline and follow-up interviews. Only a small proportion of the Accelerated group increased their scores (4.9%) or maintained their scores (9.8%) between the interview points. Within the Standard group, 43.1% decreased their Ambivalence scores, 33.3% increased their scores and 23.5% did not change their scores between the interviews. Chi-square analysis indicated statistically significant differences in the proportions of the Standard and Accelerated group that changed their scores between the baseline and follow-up interviews ($\chi^2 = 28.20$, $p<0.001$) (Table 4.8).

Table 4.8: Changes in Ambivalence scores between baseline and follow-up interviews

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n(%) | Accelerated n(%) | | |
| | | | | |
| increased | 17(33.3) | 4(4.9) | 28.20 | 0.001 |
| stayed the same | 12(23.5) | 8(9.8) | | |
| decreased | 22(43.1) | 70(85.4) | | |

*Taking Steps*: The majority (86.6%) of the Accelerated group reported decreasing their Taking Steps scores over the waiting period, 7.3% increased their scores and 6.1% maintained their scores between the interviews. Within the Standard group 45.1% decreased their Taking Steps scores, 45.1% increased their scores and a further 9.8% maintained their scores between the two interview points. There was a statistically significant difference between the proportions of the Standard and Accelerated groups whose Taking Steps scores changed over the waiting period ($\chi^2 = 28.20$, $p<0.001$) (Table 4.9).

Table 4.9: Changes in Taking Steps scores between baseline and follow-up interviews

| | Treatment entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n(%) | Accelerated n(%) | | |
| | | | | |
| increased | 23(45.1) | 6(7.3) | 28.82 | 0.001 |
| stayed the same | 5(9.8) | 5(6.1) | | |
| decreased | 23(45.1) | 71(86.6) | | |

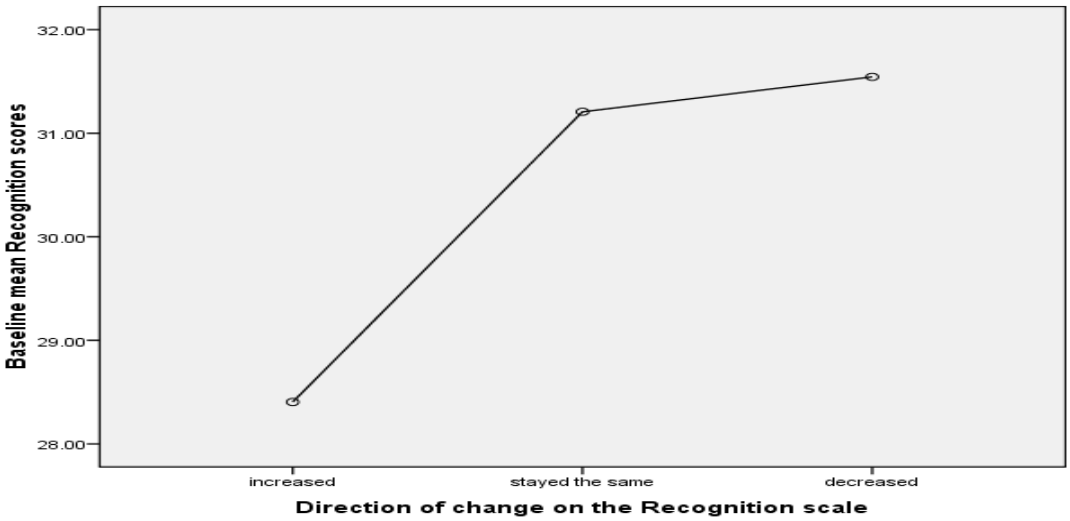
### 4.4.3 Changes in readiness according to baseline readiness scores

*Hypothesis 2: Waiting times will be more strongly associated with changes in readiness scores over the waiting period than baseline demographic or clinical characteristics.*

Two sets of analyses were performed to examine the relative association of a range of patient characteristics within the sample on the changes in readiness scores reported in the previous analyses. First of all analysis of variance (ANOVA) examined the direction of change in readiness scores (increased/ decreased/ stayed the same) between the baseline and follow-up interviews according to baseline readiness levels. Post-hoc paired comparisons between the change groups were assessed by Scheffe tests (for unequal sample sizes).

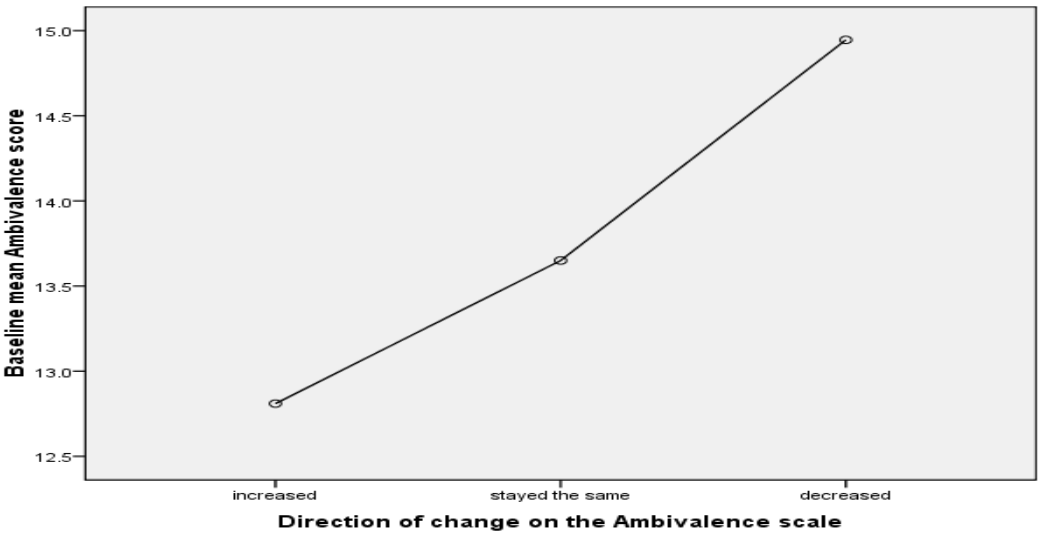
Figure 4.4 demonstrates that heroin users whose Recognition scores decreased over the waiting period had significantly higher baseline Recognition scores (31.8, s.d.3.3) compared to those whose scores increased (28.4, s.d.3.3) or stayed the same between the interviews (31.3, s.d.2.8; $F = 16.00$, d.f.$= 2,130$, $p<0.001$).

Figure 4.4: Change in Recognition scores over the waiting period according to baseline Recognition scores.



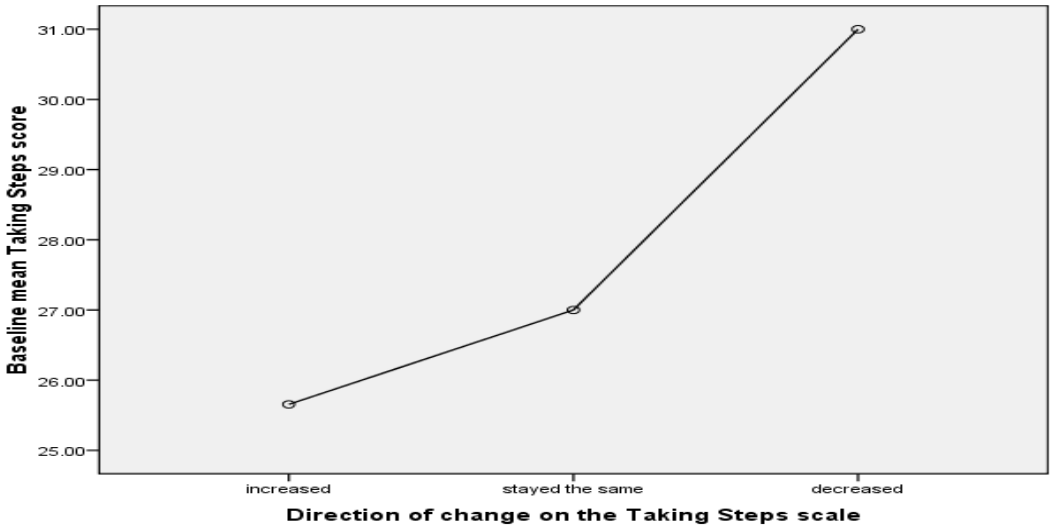

Heroin users whose Ambivalence scores decreased over the waiting period had significantly higher baseline Ambivalence scores (15.0, s.d.2.0) compared to those whose scores increased (12.7, s.d.1.8) or remained stable at follow-up (13.6, s.d.1.0; d.f.= 2,130, F = 9.72, p<0.001) (Figure 4.5).

Figure 4.5: Change in Ambivalence scores over the waiting period according to baseline Ambivalence scores



Waiting list participants whose Taking Steps scores decreased over the waiting period had the highest baseline Taking Steps scores (29.9, s.d.4.07) compared to those whose scores increased over the waiting period (25.7, s.d.6.07) or remained the same (26.9, s.d.3.7). The baseline Taking Steps scores of the three change groups were significantly different ($F = 12.35$, d.f = 2,130, $p<0.001$) (Figure 4.6).

Figure 4.6: Change in Taking Steps scores over the waiting period in relation to baseline Taking Steps scores




The same pattern of results was found on each of the readiness scales. Heroin users with the lowest baseline readiness scores increased their scores over the waiting period, and those with the highest baseline readiness scores decreased their scores over the same period.

In order to assess whether any patient characteristics were associated with the direction of change in readiness scores over the waiting period GLM multivariate analyses of variance (MANOVA) were conducted. Patient characteristics were entered as the dependent variables and the direction of change (increased/ decreased/ stayed the same) was entered as the grouping variable. Continuous variables included in the analysis were age, physical and psychological health scores and Severity of Dependence Scale for heroin use assessed at the baseline interview. Waiting time prior to scheduled treatment entry (number of days) was also included in the analysis. Post-hoc paired comparisons between the change groups were assessed by Scheffe tests. Separate chi-

square tests assessed the association between categorical variables (gender, employment, relationship and injecting status) and the direction of change in readiness scores (increased/ decreased/ stayed the same).

The MANOVA for the Recognition scale was not statistically significant ($F = 1.26$, $p = 0.26$). However, univariate F tests indicated that physical health status ($F = 3.88$, $p<0.05$) and psychological health status ($F = 4.12$, $p<0.05$) were significantly related to Recognition scale change status. Heroin users who increased their Recognition scores over the waiting period reported significantly higher mean physical health scores and psychological health scores than those whose scores decreased or did not change over the waiting period (Table 4.10).

The length of the waiting period was not associated with the direction of change in the readiness scores over this period, supporting the earlier findings when mean changes over the waiting period on the Recognition scale were analysed. There was a trend for heroin users whose scores increased to be older, although this did not reach statistical significance in univariate F-tests.

Table 4.10: Associations between baseline demographic and clinical characteristics and change status on the Recognition scale

| | Increased score mean (s.d) | Stayed the same mean (s.d) | Decreased score mean (s.d) | F | p |
|---|---|---|---|---|---|
| Physical health score | 18.3(7.6) | 13.6(7.5) | 14.9(7.5) | 3.88 | 0.02 |
| Psychological health score | 19.6(9.5) | 14.7(6.7) | 15.4(7.7) | 4.12 | 0.02 |

Chi-square analysis revealed differences in the proportion of men and women in the Recognition change groups ($F = 6.41$, $p<0.05$), with a greater proportion of women increasing their Recognition scores over the waiting period compared to men (53.1% versus 29.7%). Employment status, relationship status and injecting status did not differ between the three groups.

The MANOVA was repeated using the same baseline characteristics and change status on the Ambivalence scale and the Taking Steps scale. The model for the Ambivalence

scale was statistically significant (F = 2.45, p = 0.01). Waiting time was the only significant variable in the model. Heroin users whose Ambivalence score increased over the waiting period waited twice as long for treatment entry (49.8 days, s.d.24.9) as those whose scores decreased (24.0 days, s.d.21.8).

The MANOVA for the Taking Steps scale was also significant (F = 13.70, p<0.001) and showed the same pattern of results. Waiting time was the only significant variable in the model. Heroin users whose Taking Steps scores increased over the waiting period waited twice as long (48.7, s.d.26.5) for treatment entry as those whose scores decreased (23.8, s.d.20.8). Chi-square analyses did not find any statistically significant differences between the Ambivalence and Taking Steps change status groups for gender, employment, relationship, or injecting status.

Hypothesis 2 predicted that waiting times would be more strongly associated with changes in readiness than baseline demographic or clinical characteristics. The results for the Ambivalence and Taking Steps scales support this hypothesis. Waiting time was the only variable to be significantly associated with readiness change status. Longer waiting times were associated with increased scores in the Ambivalence and Taking Steps scales. Waiting time was not associated with change status on the Recognition scale. Physical health and psychological health were more strongly associated with change status on this scale.

### 4.4.4 Waiting times and treatment entry

*Hypothesis 3: Longer waiting times will be associated with lower rates of treatment entry.*

Of the 133 heroin users who applied for treatment, 108 (81.2%) entered treatment after the waiting period and 25 (18.8%) did not. Of the 108 who entered treatment 39 (76.5%) had been randomised to the Standard group and 69 (84.1%) to the Accelerated group after the baseline research interview. The difference in treatment entry rates according to group randomisation was not statistically significant ($\chi^2$ =1.21, p = 0.27).

An independent t-test revealed that the heroin users who did not enter treatment experienced a longer delay (days waited) than those who entered treatment, although this failed to reach statistical significance (35.8 days compared to 30.1 days; t = 0.30, p = 0.76). When the waiting times of the Standard and Accelerated groups were examined separately, those who entered treatment did not experience a significantly shorter or longer wait compared to those who did not enter treatment (Table 4.11).

Table 4.11: Waiting times and treatment entry status of the full sample and the treatment-entry groups

| | Entered treatment mean wait (days/s.d) | Did not enter treatment mean wait (days/s.d) | t | p |
|---|---|---|---|---|
| Full sample | 30.1(25.9) | 35.8(26.6) | 0.30 | 0.76 |
| Standard group | 58.3 (24.5) | 58.9(20.5) | 0.35 | 0.73 |
| Accelerated group | 14.1(2.1) | 14.5(1.9) | 0.74 | 0.46 |

The waiting times of the Standard group ranged from 22-116 days (without the outliers removed). In order to more adequately examine the relationship between waiting times and treatment entry, the number of days waited by study participants in the Standard group was divided into two groups by a median split of 47 days. Chi-square tests showed that there was no difference in treatment entry rates of those who waited less than 47 days or more than 47 days to enter treatment ($\chi^2 = 0.01$, p = 0.94).

The hypothesis that longer waiting times would be associated with lower rates of treatment entry was not supported. Similar proportions of the Standard and Accelerated groups entered treatment after the waiting period. Examining waiting times as a continuous variable (full sample) also revealed no association between the variables.

### 4.4.5 Readiness to change and treatment entry

*Hypothesis 4: Readiness to change will be a stronger predictor of treatment entry status than demographic or substance use variables.*

Chi-square analyses and independent t-tests were conducted to assess the relationship between treatment entry status (entered treatment/did not enter treatment) and a number of demographic, substance use and readiness to change variables. These results are presented in Tables 4.12 and 4.13.

Table 4.12: Baseline descriptive data for individual characteristics associated with treatment entry status

| | Entered Treatment (n=108) | Did not enter treatment (n=25) | $\chi^2$/t | p |
|---|---|---|---|---|
| Age | 33yrs (s.d.8.1) | 32.7yrs (s.d.7.4) | 0.37 | 0.71 |
| Gender : male<br>female | 82 (75.9%)<br>26 (24.1%) | 19 (76.0%)<br>6 (24.0%) | 0.01 | 0.99 |
| Ethnicity* white<br>non-white | 83 (76.9%)<br>25(23.1%) | 19(76.0%)<br>6(24.0%) | 0.01 | 0.93 |
| Physical health scores** | 16.2 (s.d.7.3) | 14.4 (s.d.9.2) | 1.02 | 0.31 |
| Psychological health scores | 16.7 (s.d.8.1) | 17.1 (s.d.9.7) | 0.23 | 0.82 |
| Relationship status: partner | 54(50.0%) | 54 (50.0%) | 0.29 | 0.58 |
| Employed | 25(23.1%) | 5 (20.0%) | 0.12 | 0.73 |

*Due to the small number of heroin users in the different ethnic categories, these were combined into white/non-white categories. **Physical and psychological health status. Scores range from 0-40 where higher scores represent a greater frequency of symptoms

Only one characteristic assessed at baseline was found to be associated with treatment entry – frequency of crack cocaine use was higher among heroin users who did not enter treatment compared to those who entered treatment (3.1 versus 1.6 days per week; $t = 2.23$, $p<0.05$)[3].

[3] Unadjusted p-value

Table 4.13: Baseline descriptive data for readiness to change and substance use variables associated with treatment entry status

| | Entered treatment (n=108) | Did not enter treatment (n=25) | $\chi^2$/t | p |
|---|---|---|---|---|
| Recognition | 30.4(s.d.3.3) | 30.0 (s.d.3.7) | 0.53 | 0.60 |
| Ambivalence | 14.3(s.d.2.4) | 14.9 (s.d.2.4) | 1.08 | 0.28 |
| Taking Steps | 29.2(s.d.6.0) | 31.0 (s.d.4.6) | 1.45 | 0.15 |
| Heroin frequency* | 6.0(s.d.2.0) | 6.2 (s.d.1.9) | 0.38 | 0.71 |
| Non-prescribed methadone frequency | 0.8(s.d.1.8) | 1.1 (s.d.2.3) | 0.17 | 0.45 |
| Crack cocaine frequency | 1.6(s.d.1.2) | 3.1 (s.d.2.2) | 2.23 | 0.03 |
| Cannabis frequency | 1.8(s.d.1.0) | 2.0 (s.d.1.3) | 0.29 | 0.78 |
| Alcohol frequency | 1.7(s.d.1.1) | 1.7 (s.d.1.0) | 0.01 | 0.99 |
| Intravenous drug use | 46 (42.6%) | 14 (56%) | 1.47 | 0.23 |
| Heroin SDS** | 11.3(s.d.2.9) | 10.5(s.d.3.1) | 1.17 | 0.24 |

*Substance use frequency refers to days per week ** Severity of Dependence Scale scores range between 0-15 with higher scores representing greater severity of substance misuse problems.

**Exploratory analyses**

The previous analyses demonstrated that only one baseline characteristic was significantly associated with treatment entry status. The analyses were repeated to examine the relationship between treatment entry status and patient characteristics assessed at the time of scheduled treatment entry. These results are presented in Table 4.14.

Four variables assessed at the time of scheduled treatment entry were associated with treatment entry. Frequency of heroin use was higher among those who did not enter treatment (5.0 versus 3.2 days per week; $t = 2.09$, $p<0.05$)[4]. Frequency of crack cocaine was also higher among heroin users who did not enter treatment (3.2 versus 1.1 days per week: $t = 3.05$, $p<0.01$). Recognition scores were higher among those who entered treatment (30.4 versus 28.2; $t = 2.06$, $p<0.05$) [5] and Ambivalence scores were lower among those who entered treatment (11.5 versus 13.6; $t = 3.27$, $p = 0.001$). Results adjusted with the Bonferroni Correction found only Ambivalence scores and frequency

[4 & 5] Unadjusted p-value

of crack cocaine, assessed at time of scheduled treatment entry, were significantly associated with treatment entry status.

Table 4.14: Readiness to change and substance use variables assessed at follow-up

| | Entered treatment (n=108) | Did not enter treatment (n=25) | $\chi^2$/t | p |
|---|---|---|---|---|
| Recognition | 30.4(s.d.3.1) | 28.2 (s.d.5.0) | 2.06 | 0.04 |
| Ambivalence | 11.5(s.d.3.0) | 13.6 (s.d.3.0) | 3.27 | 0.001*** |
| Taking Steps | 24.9 (s.d.5.9) | 27.0 (s.d.5.7) | 1.65 | 0.10 |
| Heroin frequency* | 3.2(s.d.2.8) | 5.0 (s.d.2.7) | 2.09 | 0.04 |
| Non-prescribed methadone frequency | 0.75(s.d.2.0) | 0.46(s.d.1.5) | 0.62 | 0.54 |
| Crack cocaine frequency | 1.1(s.d.1.0) | 3.2 (s.d.2.8) | 3.05 | 0.005*** |
| Cannabis frequency | 1.8(s.d.1.0) | 1.2(s.d.0.8) | 0.91 | 0.37 |
| Alcohol frequency | 1.7(s.d.1.1) | 1.9(s.d.0.9) | 0.47 | 0.64 |
| Intravenous drug use | 46(42.6%) | 14(56.0%) | 0.33 | 0.56 |
| Heroin SDS** | 11.3(2.9) | 10.5(3.1) | 1.17 | 0.24 |

*Substance use frequency refers to days per week. ** Severity of Dependence Scale scores range between 0-15 with higher scores representing greater severity of heroin use problems. ***Significant after Bonferroni Correction.

The likelihood of treatment entry was also assessed according to the direction of change on each of the readiness scales over the waiting period (increased/ stayed the same/ decreased readiness scores). Treatment entry status was not significantly associated with changes on the readiness scales over the waiting period (Recognition $\chi^2 = 4.27$, p = 0.12; Ambivalence $\chi^2 = 3.35$, p = 0.19; Taking Steps $\chi^2 = 4.31$, p = 0.12). Changes in heroin use between baseline and treatment entry (increased/ stayed the same/ decreased frequency of heroin use) were also not significantly related to treatment entry status ($\chi^2 = 1.45$, p = 0.49).

### 4.4.6 Modelling predictors of treatment entry

Logistic regression procedures (using a backward elimination method) were conducted to identify the possible predictors of treatment entry. Measures included in the logistic regression were those variables statistically significant ($p<0.05$) in the bi-variate analyses (crack cocaine frequency at baseline, Recognition and Ambivalence scores, heroin frequency and crack cocaine frequency at the time of scheduled treatment entry). The variables were checked for multi-collinearity prior to the modelling procedure.

Pearson correlations showed that the Recognition scores and Ambivalence scores were positively correlated ($r = 0.1$, $p<0.05$), however as this was only a modest correlation both variables were included in the logistic regression analysis. Frequency of crack cocaine use assessed at baseline and at treatment entry were highly correlated, ($r = 0.7$, $p<0.001$). Frequency of crack cocaine assessed at the time of treatment was chosen to be included in the analysis. These variables were entered as predictors of the dichotomous outcome variables - entered treatment and did not enter treatment.

Table 4.15: Variables in the final model of the logistic regression analysis predicting treatment entry status

| Independent variables in the final model | B | Wald | p | Odds Ratio (Exp)B | 95% C.I |
|---|---|---|---|---|---|
| Ambivalence | -0.42 | 12.21 | 0.001 | 0.65 | 0.52,0.83 |
| Recognition | 0.35 | 14.90 | 0.001 | 1.41 | 0.89,1.69 |
| Frequency of crack cocaine | -0.36 | 12.77 | 0.001 | 0.70 | 0.57,0.85 |

The final model was statistically significant ($\chi^2 =39.58$, d.f. = 3, $p<0.001$). The logistic regression indicated that Recognition scores ($p<0.001$), Ambivalence scores ($p<0.001$) and frequency of crack cocaine use ($p<0.001$) assessed at the time of treatment entry were all significant variables in the final model predicting treatment entry status (see Table 4.15). However, the model predicted only 8.0% of the variance in treatment entry status. Frequency of heroin use assessed at treatment entry was not a significant predictor of treatment entry status.

A negative Beta value suggests that the Ambivalence scale scores and the frequency of crack cocaine use were lower among heroin users who entered treatment and higher among those who did not enter treatment. A positive Beta value suggests that Recognition scores were higher among waiting list participants who entered treatment compared to those who did not enter treatment.

These findings support the hypothesis that higher readiness to change, and specifically the Ambivalence and Recognition dimensions, is a stronger predictor of treatment entry status than any of the demographic or substance use variables examined. The one exception to this was the frequency of crack cocaine use assessed at treatment entry

which was also found to be a statistically significant predictor of treatment entry within the sample, with lower scores reported among those who entered treatment after the waiting period.

### 4.4.7 Treatment-entry group and substance use

*Hypothesis 5: Longer waiting times will be associated with fewer reductions in substance use over the waiting period, compared to shorter waiting times.*

Changes in the frequency of heroin, non-prescribed methadone, crack cocaine, cannabis and alcohol use between the baseline and follow-up interviews were examined using GLM repeated measures analysis of variance. The two interview points (baseline/follow-up) were the within-subjects factor and treatment-entry group (Standard/Accelerated) was the between-subjects factor. The changes in the frequencies of these five substances are displayed as main effects in Table 4.16.

A statistically significant interaction effect was found between changes in the frequency of heroin use and treatment-entry group ($F = 0.93$, $p<0.05$). The Standard group reported reductions in the frequency of heroin use over the waiting period, although there was no change over this period among the Accelerated group. Statistically significant increases in the frequency of non-prescribed methadone use were found within the Standard and Accelerated groups ($F = 7.69$, $p<0.01$) although these changes did not differ between the two groups. Small, but statistically significant, reductions in the frequency of crack cocaine use over the waiting period were also reported ($F = 5.23$, $p<0.05$), which did not differ between the two groups. There were no significant changes in the frequency of cannabis and alcohol use over the waiting period.

These results do not support the hypothesis that longer waiting times will be associated with fewer reductions in substance use over the waiting period relative to shorter waiting times. The Standard group reported the greatest reductions in the frequency of heroin use over the waiting period. Changes reported for the other substances did not differ between the treatment-entry groups.

Table 4.16. Changes in the frequency of substance use (days per week) between baseline and follow-up interviews

| | Standard (n=51) | | | Accelerated (n=82) | | | F for change (1,131) | F for change by group (1.131) |
|---|---|---|---|---|---|---|---|---|
| substance | Baseline mean (s.d.) | Follow-up mean (s.d.) | Effect sizes* (Cohen's *d*) | Baseline mean (s.d.) | Follow-up mean (s.d.) | Effect sizes (Cohen's *d*) | | |
| Heroin | 6.2(2.1) | 5.2(2.7) | 0.6 | 6.0(1.9) | 6.0(2.0) | 0 | 7.12 | 0.93** |
| Non-prescribed methadone | 0.5(0.8) | 0.8(1.9) | 0.2 | 0.5(0.8) | 0.9(1.9) | 0.4 | 7.69*** | 0.09 |
| Crack cocaine | 1.9(2.5) | 1.3(2.2) | 0.4 | 1.8(2.6) | 1.7(2.5) | 0.7 | 5.23** | 0.15 |
| Cannabis | 1.5(2.4) | 1.5(2.6) | 0 | 2.0(2.7) | 1.8(2.6) | 0.4 | 0.49 | 0.64 |
| Alcohol | 1.9(2.8) | 2.0(2.8) | 0 | 1.6(2.6) | 1.5(2.5) | 0 | 0.09 | 0.88 |

*Effect size where 0.2 is indicative of a small effect size, 0.5 for a medium and 0.8 for a large effect size(Cohen, 1992) **0.5, ***0.01

**Exploratory analyses**

In order to further explore the relationship between waiting times and changes in substance use levels these variables were re-analysed using a continuous waiting time variable (number of days waited) and a change variable for each substance (substance use at baseline - substance use at follow-up). Correlational analyses were conducted assessing the relationship between waiting times and the change in the frequency of substance use over the waiting period. This method of analysis avoided some of problems associated with the distribution of waiting times of the two treatment-entry groups mentioned earlier. The results are presented in Table 4.17.

Table 4.17: Correlational analyses between waiting times and change in the frequency of substance use over the waiting period.

| Frequency of substance use | r (sig) |
|---|---|
| Heroin | -0.04(0.69) |
| Non-prescribed methadone | -0.07(0.45) |
| Crack cocaine | -0.16(0.06) |
| Cannabis | 0.06 (0.44) |
| Alcohol | 0.08(0.39) |

This method of examining changes in the frequency of substance use over the waiting period failed to reveal any significant relationships between the variables. The association between cra ck cocaine use and waiting time approached statistical significance ($r = -0.16$, $p= 0.06$).

### 4.4.8 Changes in substance use at a case-by-case level

The previous results are useful in demonstrating group changes in substance use, but they fail to show the variability of changes within the two treatment-entry groups. Examining substance use at a case-by-case level indicated a wide variation in the direction of changes reported by the sample. Chi-square analyses examining changes in the frequency of substance use (increased/ decreased/ stayed the same) between baseline and follow-up interviews are displayed in Tables 4.18 to 4.22.

*Heroin frequency*: The majority of the sample reported no change in the frequency of heroin use between the baseline and follow-up interviews (Standard =58.8%; Accelerated =57.3%). The results also showed that approximately a quarter (22.0%) of the Accelerated group and a third (35.3%) of the Standard group made reductions in the frequency of their heroin use over the waiting period while 5.9% of the Standard and 20.7% of the Accelerated group reported increasing the frequency of their heroin use over this period. Chi-square analysis found a statistically significant difference in the proportion of substance users in the Standard and Accelerated groups who made changes in heroin use over the waiting period ($\chi^2 = 6.69$, $p<0.05$)[6] (Table 4.18).

Table 4.18: Changes in heroin frequency between baseline and follow-up

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n (%) | Accelerated n (%) | | |
| | | | | |
| decreased | 18(35.3) | 18(22.0) | 6.69 | 0.04 |
| stayed the same | 30(58.8) | 47(57.3) | | |
| increased | 3(5.9) | 17(20.7) | | |

*Non-prescribed methadone frequency*: Among the waiting list participants who reported non-prescribed methadone use at baseline, approximately 60.0% of both treatment-entry groups reported no change the frequency of use between the interviews. Reductions in the frequency of non-prescribed methadone use were reported by 15.7% of the Standard group and 24.4% of the Accelerated group and increased use was reported by 23.5% of the Standard group and 17.1% of the Accelerated group between the interviews (Table 4.19).

Table 4.19: Changes in non-prescribed methadone frequency between baseline and follow-up

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n (%) | Accelerated n (%) | | |
| | | | | |
| decreased | 8 (15.7) | 20(24.4) | 1.83 | 0.40 |
| stayed the same | 31(60.8) | 48(58.5) | | |
| increased | 12(23.5) | 14(17.1) | | |

[6] Unadjusted p-value.

*Crack cocaine frequency*: Among the crack cocaine users, 41.2% of the Standard and 46.3% of the Accelerated group maintained the frequency of use between the baseline and follow-up interviews. Reductions in the frequency of crack cocaine use were reported by 41.2% of the Standard and 30.5% of the Accelerated group and the remaining 17.6% of the Standard and 23.2% of the Accelerated group reported increasing the frequency of use (Table 4.20).

Table 4.20: Changes in crack cocaine frequency between baseline and follow-up

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n (%) | Accelerated n (%) | | |
| | | | | |
| decreased | 21 (41.2) | 25(30.5) | 1.68 | 0.43 |
| stayed the same | 21 (41.2) | 38(46.3) | | |
| increased | 9(17.6) | 19(23.2) | | |

*Cannabis frequency:* Among the cannabis users, 50.0% of the Standard group and 56.2% of the Accelerated group reported the same frequency of use at the baseline and follow-up interviews. Reductions in the frequency of cannabis use were reported by 32.0% of the Standard group and 27.5% of the Accelerated group, and 18.0% of the Standard and 27.5% of the Accelerated reported increasing the frequency of their cannabis use at follow-up (Table 4.21).

Table 4.21: Changes in cannabis frequency between baseline and follow-up

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n (%) | Accelerated n (%) | | |
| | | | | |
| decreased | 16(32.0) | 22(27.5) | 0.49 | 0.78 |
| stayed the same | 25(50.0) | 45(56.2) | | |
| increased | 9(18.0) | 22(27.5) | | |

*Alcohol frequency:* Among the heroin users reporting alcohol use at baseline, over half of both treatment-entry groups maintained the frequency of their use between the interviews. Less than a fifth of the Standard (11.8%) and Accelerated (19.5%) groups reported reductions in the frequency of alcohol use, and the remaining 29.4% of the Standard and 25.6% of the Accelerated group reported increasing their use over the waiting period (Table 4.22).

Table 4.22: Changes in alcohol frequency between baseline and follow-up

| | Treatment-entry group | | $\chi^2$ | p |
|---|---|---|---|---|
| | Standard n (%) | Accelerated n(%) | | |
| | | | | |
| decreased | 6 (11.8) | 16(19.5) | 0.10 | 0.49 |
| stayed the same | 30 (58.8) | 45(54.9) | | |
| increased | 15(29.4) | 21(25.6) | | |

There were no statistically significant differences in the proportion of heroin users who changed the frequency of non-prescribed methadone use ($\chi^2 = 1.83$, p = 0.04), crack cocaine use ($\chi^2 = 1.68$, p = 0.43), cannabis ($\chi^2 = 0.49$, p = 0.78) or alcohol use ($\chi^2 = 0.10$, p = 0.49) over the waiting period.

A number of heroin users also reported achieving abstinence during the waiting period. While 4 (3.0%) patients reported stopping heroin use, 19 (45.2%) patients reported abstinence from non-prescribed methadone, 22 (26.2%) abstinence from crack cocaine, 23 (31.1%) abstinence from cannabis and 17 (23.6%) abstained from alcohol. There were no statistically significant associations between treatment-entry group and abstinence of heroin use ($\chi^2 = 0.70$, p = 0.43), non-prescribed methadone use ($\chi^2 = 0.67$, p = 0.40), crack cocaine use ($\chi^2 = 4.00$, p = 0.14), cannabis ($\chi^2 = 0.35$, p = 0.56) or alcohol use ($\chi^2 = 0.65$, p = 0.42).

Analyses of changes in substance use at a case-by-case level over the waiting period found that members of the Standard group reported greater reductions in the frequency of heroin, crack cocaine and cannabis use compared to the Accelerated group, although change in the frequency of heroin use over the waiting period was the only relationship to be statistically significant. The Accelerated group reported greater reductions in alcohol and non-prescribed methadone use although this was not significantly related to treatment-entry group. These findings fail to support the hypothesis that longer waiting times will be associated with fewer reductions in substance use over the waiting period relative to shorter waiting times.

### 4.4.9 Readiness to change and heroin use

*Hypothesis 6: Increases in readiness scores over the waiting period will be associated with reductions in heroin use.*

In order to examine whether changes in readiness scores over the waiting period were associated with changes in the frequency of heroin use over the same period GLM repeated measures analysis of variance were performed on each of the three readiness scales. Readiness scores at the two interview points (baseline/follow-up) were the within-subjects factor and changes in the frequency of heroin use over the waiting period (increased/ stayed the same/ decreased) were the between subjects factors. Post-hoc paired comparisons between the change-groups were assessed by Scheffe tests (for unequal sample sizes). The results of the analyses are presented in Tables 4.23 - 4.25

The analyses revealed no statistically significant changes on the Recognition scale between baseline and follow-up interviews ($F = 0.01$, d.f. =1,131, $p = 0.92$) and no interaction effects were found between these variables ($F = 2.09$, d.f.=1,131, $p<0.13$) (Table 4.23).

Table 4.23: The relationship between Recognition scale scores and change in the frequency of heroin use over the waiting period

| | Baseline Recognition scores | Follow-up Recognition scores | F for change (p) | F for change by group (p) |
|---|---|---|---|---|
| Increase in frequency of heroin use | 28.3(4.1) | 29.6(4.1) | 0.01(0.92) | 2.09 (0.13) |
| No change in frequency of heroin use | 30.9(3.0) | 30.5(3.3) | | |
| Decrease in frequency of heroin use | 30.0(3.7) | 29.2(3.0) | | |

On the Ambivalence scale, statistically significant main effects were found for mean scores between baseline and follow-up, with scores decreasing within each change group ($F = 60.32$, df =1,131, $p = 0.001$), although no interaction effect was found between these Ambivalence scores and the change groups ($F =1.05$, d.f. 1,115, $p = 0.35$) (Table 4.24).

Table 4.24: Relationship between Ambivalence scale scores and change in the frequency of heroin use over the waiting period

| | Baseline Ambivalence scores | Follow-up Ambivalence scores | F for change (p) | F for change by group(p) |
|---|---|---|---|---|
| Increase in frequency of heroin use | 14.1(1.9) | 10.4(2.9) | 60.32(0.001) | 1.05(0.35) |
| No change in the frequency of heroin use | 14.5(2.4) | 12.1(2.8) | | |
| Decrease in frequency of heroin use | 14.1(2.9) | 11.1(4.0) | | |

The same pattern of results was found on the Taking Steps scale, with a main effect for changes in Taking Steps scores over time (F = 37.39, d.f.=1,131, p = 0.001), although these scores were not associated with heroin frequency change group (F = 1.64, d.f.=1,131,p = 0.20) (Table 4.25).

Table 4.25: Relationship between Taking Steps scale scores and change in the frequency of heroin use over the waiting period

| | Baseline Taking Steps scores | Follow-up Taking Steps scores | F for change (p) | F for change by group (p) |
|---|---|---|---|---|
| Increase in frequency of heroin use | 30.1(4.5) | 23.1(4.7) | 37.39(0.001) | 1.64(0.20) |
| No change in the frequency of heroin use | 28.6(6.8) | 24.7(6.3) | | |
| Decrease in the frequency of heroin use | 30.5(4.4) | 27.3(5.1) | | |

Together these results demonstrate that changes in readiness scores over the waiting period were not related to changes in the frequency of heroin use over the same period. The next section will assess whether other patient factors were related to changes in heroin use over the waiting period.

### 4.4.10 Changes in heroin use and baseline readiness scores

*Hypothesis 7: Reductions in the frequency of heroin use over the waiting period will be associated with high baseline readiness scores.*

In order to examine whether reductions in the frequency of heroin use were associated with baseline readiness scores, multiple analysis of variance (MANOVA) were conducted using heroin change status (increased/ stayed the same/ decreased over the waiting period) as the independent variable and readiness scores (Recognition, Ambivalence, Taking Steps), waiting time (number of days waited) and patient factors (frequency of heroin use, physical health status and psychological health status assessed at baseline) as the dependent variables.

Table 4.26 displays the MANOVA results. The model of the MANOVA was statistically significant ($F = 1.71$, d.f. = 7,124, $p<0.001$). Frequency of heroin use, Recognition scores assessed at baseline and waiting time were associated with heroin frequency change status. Post hoc analyses showed significant differences between the subgroups (increased/ decreased /stayed the same) on the three variables significant on the MANOVA.

Table 4.26: Variables significant in the MANOVA assessing the association between baseline patient factors and frequency of heroin change status

| | Change in heroin frequency | | | F | p |
|---|---|---|---|---|---|
| | Increased mean (s.d.) | Stayed the same mean (s.d.) | Decreased mean (s.d) | | |
| Frequency of heroin use | 3.2(0.4) | 6.7(0.2) | 6.1(0.3) | 42.55 | 0.001* |
| Recognition | 28.6(0.8) | 30.9(0.4) | 30.1(0.6) | 3.94 | 0.02* |
| Waiting time | 18.1(5.6) | 34.5(2.7) | 28.8(4.3) | 3.61 | 0.03* |

* Post Hoc analysis indicated statistically significant differences between the groups

Waiting list participants whose frequency of heroin use did not change between the interviews had the highest baseline Recognition scores (30.9, s.d.0.4), the highest baseline heroin frequency (6.7 days, s.d. 0.2), and the longest waiting times (34.5 days,

s.d.2.7) compared to participants whose heroin use increased or decreased over the waiting period.

Waiting list participants who increased the frequency of heroin use had the lowest baseline Recognition scores (28.6, s.d.0.8), the shortest waiting times of the three subgroups (18.1 days, s.d.5.6) and the lowest baseline heroin frequency (3.2 days, s.d 0.4) compared to those heroin users whose heroin use decreased or remained at the same level over time.

The results of the MANOVA support the hypothesis stating that reductions in the frequency of heroin use over the waiting period will be associated with high baseline readiness scores, to an extent. While reductions in the frequency of heroin use were associated with high baseline Recognition scores, waiting list participants whose frequency of heroin use did not change over the waiting period had the highest baseline Recognition scores. Changes in the frequency of heroin use over the waiting period were not associated with baseline Ambivalence or Taking Steps scale scores.

### 4.4.11 Waiting time expectations and treatment entry

*Hypothesis 8: Heroin users' expectations about the length of the waiting period will be associated with the likelihood of treatment entry.*

The baseline research interview asked the full sample (n=133) how long they expected to wait for treatment to start. The mean waiting times of the heroin users who entered treatment and those who did not are presented in Table 4.27 within the categories of their expected waiting times. Among the participants who expected to wait a week for treatment to start, average waiting times were 26.3 days (s.d.26.5) for those who entered treatment and 40.6 days (s.d.40.1) for those who did not. Participants who entered treatment and expected to wait between 1 and 4 weeks actually waited a mean of 26.9 days (s.d.21.7), while those who did not enter treatment waited 35.0 days (s.d.23.2). Although waiting times of those who did not enter treatment exceeded the waiting times of those who did enter treatment in the 1 week and 1-4 week expected waiting time categories, these differences were not statistically significant.

Table 4.27: Actual waiting times (days) of the substance users who entered treatment and those who did not according to expected waiting time categories

| Expected waiting time categories | Entered treatment mean wait (s.d.) | Did not enter treatment mean wait (s.d.) | t | p |
|---|---|---|---|---|
| 1 week | 26.3 (26.5) | 40.6 (40.1) | 0.89 | 0.39 |
| 1-4 weeks | 26.9 (21.7) | 35.0 (23.2) | 1.28 | 0.21 |
| 1-2 months | 35.1 (29.6) | 31.0 (29.4) | 0.22 | 0.83 |
| More than 2 months | 47.3 (43.7) | - | | |
| Don't know | 38.5 (32.8) | 37.5 (33.2) | 0.41 | 0.97 |

Participants who entered treatment and who expected to wait between 1 and 2 months for treatment to start waited 35.1 days (s.d.29.6) and those who did not enter waited 31 days (s.d.29.4). None of the heroin users who failed to enter treatment expected to wait more than 2 months. Those who entered treatment and expected to wait more than 2 months actually waited for 47.3 days (s.d.43.7). Participants who responded that they did not know how long they would be expected to wait and entered treatment actually waited 38.5 days (s.d.32.8) and those who did not enter treatment waited 37.5 days (s.d.33.2). The difference in waiting times of the initiators and non-initiators who expected to wait 1-2 months ($t = 0.22$, $p = 0.83$) and those who did not know how long they were going to wait ($t = 0.41$, $p = 0.97$) were not statistically significant.

Within the full sample, 40.9% (n=54) of the study participants accurately matched the expected waiting time categories to their actual waiting times. For 22.0% (n=29) of the sample the actual waiting times were less than expected, and for 37.1% (n=49) the actual waiting times were longer than they expected.

Among the study participants who did not enter treatment, 56.0% (n=14) experienced waiting times which were greater than their expected waits. Half of these (n=7) participants endorsed being unhappy with the delay for treatment in the Lost-to-treatment interview. Of the remaining 11(44.0%) study participants who did not enter treatment (actual waiting time matched their expected waiting time = 7, actual waiting time was less than the expected waiting time = 4) none reported being unhappy with the delay for treatment.

In order to examine the relationship between waiting time expectations and the likelihood of entering treatment, a chi-square analysis was performed between treatment

entry status and the three categories representing the degree of concordance between expected and actual waiting times (Table 4.28). The results showed a trend for heroin users who did not enter treatment to be more likely to have actual waiting times greater than their expected waiting times, although this was not statistically significant ($\chi^2 = 4.72$, $p = 0.09$).

Table 4.28: Relationship between treatment entry and expectations of waiting times

| | Entered treatment n (%) | Did not enter treatment n (%) | $\chi^2$ | p |
|---|---|---|---|---|
| Matched actual and expected waiting time | 47(43.9) | 7(28.0) | 4.72 | 0.09 |
| Actual waiting time less than expected waiting time | 25(23.4) | 4(16.0) | | |
| Actual waiting time more than expected waiting time | 35(32.0) | 14(56.0) | | |

### 4.4.12 Factors associated with expected waiting times

In order to examine if any demographic or substance use characteristics assessed at baseline interview were associated with waiting time expectations, analysis of variance (ANOVA) for continuous variables (with Scheffe post-hoc comparisons) and chi-square analyses for categorical variables were performed. The results are presented in Table 4.29. Age was the only characteristic which significantly differed between the expected waiting time categories. The older waiting list participants (mean of 35.9 years; s.d.7.8) expected to wait the shortest amount of time for treatment to begin (1 week) and the youngest participants (mean of 31.9 years; s.d.7.7) expected to wait between 1- 4 weeks for treatment to begin ($F = 2.95$, $p<0.05$). The number of previous heroin treatments, Severity of Dependence Scale score for heroin use, gender, ethnic status, physical or psychological health status or readiness to change scores assessed at the start of the waiting period were not related to waiting time expectations.

Table 4.29: Analysis of variance for demographic, readiness and substance use characteristics (baseline) and expected waiting times

| | 1 week | 1-4 weeks | 1-2 months | More than 2 months | $F/\chi^2$ | p |
|---|---|---|---|---|---|---|
| Age | 35.9(s.d.7.8) | 31.9(s.d.7.7) | 32.3(s.d.8.0) | 32.5(s.d.6.2) | 2.95 | 0.02 |
| Number of previous heroin treatments | 2.5 (s.d.2.2) | 1.3 (s.d.1.1) | 1.7 (s.d.3.0) | 1.3 (s.d.0.5) | 1.40 | 0.24 |
| Severity of Dependence* | 11.8(s.d.2.6) | 10.9 (s.d.2.6) | 11.5(s.d.3.8) | 8.8 (s.d.2.2) | 1.19 | 0.32 |
| Gender: male | 13 (12.9%) | 58 (57.4%) | 14 (13.9%) | 3 (3.0%) | 3.92 | 0.42 |
| Ethnic status: white | 14 (13.9%) | 55 (54.5%) | 19 (18.8%) | 3 (3.7%) | 1.62 | 0.80 |
| Physical health score** | 15.6(s.d.9.5) | 15.4(s.d.7.4) | 16.8(s.d.6.8) | 17.8(s.d.7.0) | 0.20 | 0.94 |
| Psychological health score | 17.2(s.d.8.8) | 16.1(s.d.8.0) | 16.9(s.d.9.5) | 15.0(s.d.5.0) | 0.53 | 0.72 |
| Recognition | 31.2(s.d.3.5) | 30.3(s.d.3.4) | 30.6(s.d3.2) | 28.8(s.d1.7) | 0.63 | 0.64 |
| Ambivalence | 15.3(s.d.1.7) | 14.2(s.d.2.5) | 14.7(s.d.2.2) | 12.3(s.d.1.7) | 2.31 | 0.07 |
| Taking Steps | 28.5(s.d.6.5) | 29.7(s.d.6.1) | 31.0(s.d.4.9) | 28.0(s.d.7.0) | 0.92 | 0.45 |

*Severity of dependence where higher scores indicate a greater severity of substance use **Physical and psychological health status assessed by the MAP. Scores range from 0-40 where higher scores represent a greater frequency of symptoms

### 4.4.13 Readiness to change and waiting time expectations

*Hypothesis 9: Heroin users' expectations about the length of the waiting period will be associated with changes in readiness scores over this period.*

GLM repeated measures analyses of variance were performed on each of the three readiness scales according to waiting time expectation group. Readiness scores at the two interview points (baseline/follow-up) were the within-subjects factor and the expected waiting time categories were the between-subjects factors. Post-hoc paired comparisons between the change groups were assessed by Scheffe tests (for unequal sample sizes). The results of the analyses are presented in Tables 4.30 - 4.32.

There were no statistically significant main effects ($F = 0.72$, d.f. 1,129, $p = 0.40$) or interaction effects ($F = 0.31$, d.f. 1,129, $p = 0.73$) between waiting time expectation group and changes in Recognition scores over the waiting period. The pattern of changes on the Recognition scale did not vary according to the degree of concordance between expected and actual waiting times (Table 4.30).

Table 4.30: Relationship between Recognition scores and waiting time expectation categories

| | Mean Intake scores | Mean treatment entry scores | F for change (p) | F for change by group (p) |
|---|---|---|---|---|
| Matched actual and expected waiting time | 30.2(3.3) | 30.2(3.4) | 0.72(0.40) | 0.31(0.73) |
| Actual waiting time less than expected waiting time | 30.2(3.4) | 29.9(3.2) | | |
| Actual waiting time more than expected waiting time | 30.7(3.6) | 30.1(4.0) | | |

Analysis of changes on the Ambivalence scale revealed statistically significant changes in scores over time ($F = 70.09$, d.f. 1,129, $p = 0.001$) and interaction effects between these changes and the waiting time expectation group ($F = 4.94$, d.f. 1,129, $p<0.01$) (Table 4.31). Post-hoc tests showed a significant difference between changes on the Ambivalence scale among participants whose expected and actual waiting times were the same and participants whose expected waiting times were more than their actual waiting times ($p<0.01$). There was also a significant difference between participants

whose actual waiting times were more than their expected waiting times and participants whose actual waiting times were less than their expected waiting times ($p<0.05$).

Table 4.31: Relationship between Ambivalence scores and waiting time expectation categories

| | Mean Intake scores | Mean treatment entry scores | F for change (p) | F for change by group (p) |
|---|---|---|---|---|
| Matched actual and expected waiting time | 14.4(2.4) | 10.4(2.7) | 71.94(0.001) | 4.94(0.009) |
| Actual waiting time less than expected waiting time | 13.6(2.4) | 11.4(2.4) | | |
| Actual waiting time more than expected waiting time | 14.7(2.5) | 13.0(3.2) | | |

Analysis of changes on the Taking Steps scores over the waiting period revealed statistically significant main effects ($F = 42.80$, d.f. 1,129, $p = 0.001$) and significant interaction effects between changes in scale scores and waiting time expectation group ($F = 6.45$, d.f. 1,129, $p<0.01$) (Table 4.32). Although post-hoc tests failed to reveal any significant differences between the changes on the Taking Steps scales within the three waiting time categories, the table demonstrates that those participants whose expected and actual waiting times matched showed the greatest reduction in scores over the waiting period, compared to those participants whose expected and actual waiting times did not match.

Table 4.32: Relationship between Taking Steps scores and waiting time expectation categories

| | Mean Intake scores | Mean treatment entry scores | F for change | F for change by group |
|---|---|---|---|---|
| Matched actual and expected waiting time | 29.8(5.6) | 23.3(6.2) | 51.94(0.001) | 6.45(0.002) |
| Actual waiting time less than expected waiting time | 28.2(6.2) | 24.4(6.4) | | |
| Actual waiting time more than expected waiting time | 29.1(6.5) | 27.3(6.2) | | |

### 4.4.14 Summary of Study 2 findings

- Longer waiting periods were not associated with reductions in readiness to change. The shorter waiting times of the Accelerated group were related to reductions on the Ambivalence and Taking Steps scales.

- Waiting time was more strongly associated with changes on the Ambivalence and Taking Steps scores over the waiting period compared to other patient characteristics within the sample. Heroin users whose scale scores increased experienced longer delays than those whose scores remained static or decreased during this time. Physical and psychological health scores associated with increases on the Recognition scale but waiting time was not.

- Longer waiting times were not associated with lower rates of treatment entry. Similar proportions of the Standard and Accelerated groups successfully entered treatment.

- Lower Ambivalence scores and higher Recognition scores (assessed at treatment entry) were associated with treatment entry. A lower frequency of crack cocaine use at treatment entry was also found to be predictive of entering treatment within the sample.

- Longer waiting times were not associated with fewer reductions in substance use over the waiting period. The Standard group reported the greatest reductions in the frequency of heroin use over the waiting period. Changes in the frequency of the other substances used did not differ between the treatment-entry groups.

- Changes in readiness scores over the waiting period were not related to changes in the frequency of heroin use over the same period.

- Reductions in the frequency of heroin use over the waiting period were associated with higher baseline readiness scores, although study participants whose frequency of heroin use did not change between the interviews had the highest baseline Recognition scores.

- Heroin users' expectations about the length of the waiting period were not associated with the likelihood of treatment entry.

- Waiting time expectations were associated with readiness change scores over the waiting period. The greatest reductions in Ambivalence and Taking Steps scores were reported by patients whose expected and actual waiting times corresponded.

## 4.5 DISCUSSION

The purpose of Study 2 was to explore the pre-treatment period of a sample of heroin users awaiting entry into methadone treatment, focusing on the potential interactions between waiting periods of different durations, changes in readiness, treatment entry and patterns of substance use over the waiting period. The Discussion will review the findings of the different relationships examined within Study 2. The position of these findings within the conceptual framework will be examined within Chapter 5.

### 4.5.1 Length of the waiting period prior to treatment entry

The study reported wide variations in the length of time heroin users were required to wait to enter treatment under the normal clinical procedures operating within the treatment service. The Standard group experienced a mean waiting time of 58 days, which ranged between a minimum of 22 days and a maximum of 116 days. Variability in waiting times within individual treatment services (Donmall et al, 2005) and between treatment services (Luty, 2002; Stewart et al, 2000) have been reported elsewhere and may be a common feature of drug service provision in some areas of the country. This variability has been attributed to a variety of factors including the level of demand for drug services and the capacity of the service to treat drug abusers (Brown et al, 2002). These in turn are affected by economic and political factors such as staffing levels, efficiency with which services are delivered and treatment length. Regardless of the reasons for the delays in service provision, reports of lengthy waiting times clearly demonstrate that there is a disparity between supply and demand for substance abuse treatment.

### 4.5.2 Distribution of readiness to change scores

According to the interpretive ranges suggested by Miller and Tonigan (1996), the greatest proportion of the sample requested treatment with ‘low’ Recognition of their problem (42.9%), ‘medium’ Ambivalence (45.9%) and ‘low’ Taking Steps to change their behaviour (53.4%). Scores reported for the Recognition and Ambivalence scales are largely consistent with those described for drug users by Burrow-Sanchez and Lundberg (2007) in the only previous study to assess readiness using the SOCRATES

among waiting list participants with drug and alcohol problems, although the Taking Steps scores in the current sample are lower than those reported in the earlier study. The readiness scores in the current sample suggest that many of the heroin users may not be highly motivated to change their heroin use, not recognising that they have a problem or currently making positive changes to address their heroin use. Although it would be assumed that heroin users seeking treatment would have a desire to change their drug use, this is not always the case. Motivation for treatment is not synonymous with motivation for changing substance use as discussed in Chapter 3. Many substance users seek treatment for reasons other than reducing substance use such as pressure from social networks or to reduce drug tolerance (George and Tucker, 1996; Hasin, 1994).

### 4.5.3 Changes in readiness over the waiting period

The first hypothesis predicted that heroin users with longer waiting times would show greater reductions in readiness over the waiting period compared to those with shorter waiting times. This hypothesis was not supported, no statistically significant changes in readiness were found within the Standard group. However, reductions in Ambivalence and Taking Steps scores between the start and end of the waiting period were reported among the Accelerated group. The reductions on the Ambivalence and Taking Steps scales suggests that heroin users with short waiting periods are experiencing more willingness to change (reduced Ambivalence) characterised by less conflict and uncertainty about changing their drug use, but less propensity to take action (lower Taking Steps). The responsiveness of the treatment service, as represented by expedited treatment entry, may have reduced the feelings of uncertainty that change was needed in their lives and triggered greater a commitment to the change process. The finding that many waiting list participants report that they are doing less to change their heroin use at the end of the waiting period relative to the start of the waiting period may suggest that they do not feel the need to change their heroin use when they know that substitute medication will soon be prescribed. This may reflect the difficulty previously experienced in reducing drug use without the help of substitute medication.

The absence of statistically significant changes within the Standard group may suggest that changes in readiness which occur over short waiting periods (i.e. after a 2-week

waiting period as reported among the Accelerated group) were not sustained over longer delays. The design of the study does not allow us to directly test whether short-term changes in readiness among the Standard group return to baseline levels by the end of the waiting period. The findings suggest that a more prolonged wait does not have a deleterious effect on readiness to change in the current study - delays of more than two weeks were not associated with motivational decrements, at least in terms of the mean readiness scores examined.

The waiting period was not associated with changes on the Recognition scale in either treatment-entry group. This may suggest that problem recognition may have prompted treatment seeking but failed to be heightened once requests for treatment had been made. Alternatively, the absence of changes on the Recognition scale may suggest that the SOCRATES is not sensitive enough to detect subtle differences in readiness over time on this dimension. Zhang et al (2004), in a study of readiness to change among a sample of alcoholic patients with severe mental illness, also reported that the Recognition subscale appeared to be less sensitive for differentiating variability of readiness to change than the other subscales.

Case-by-case analyses revealed a greater variability in the changes on the readiness scales over the waiting period than those represented by group means. Fifty per cent of the Standard group and over forty per cent of the Accelerated group reported a reduction in Recognition scores. Over thirty per cent of the Standard group increased their Ambivalence scores, compared to only five per cent of the Accelerated group. Nearly ninety per cent of the Accelerated group decreased their Taking Steps scores, as did almost half of the Standard group. Comparisons of changes between the treatment-entry groups found greater reductions in Ambivalence and Taking Steps scores among the Accelerated group compared to the Standard group, thus supporting the mean results presented earlier. These figures show that waiting for treatment, regardless of its length, was associated with reductions in readiness to change for many waiting list participants. The reduction in Recognition scores among the Accelerated group suggests that even a two-week waiting period can lead some to question whether they have a heroin use problem. The reductions on the Recognition and Taking Steps scales may be associated with the factors which prompted treatment seeking in the first place. Research has found that many substance users present to treatment at a time of crisis (Zhang et al, 2004;

DiClemente, 1999). These crises may have been resolved during the waiting period and their motivation to change may return to pre-crisis levels when a change seemed less important.

Analyses assessing baseline readiness and the direction of change in readiness scores found that participants reporting reductions on all three scales had higher baseline readiness scores, and those reporting increases in readiness had significantly lower baseline readiness scores. This pattern of results may suggest that those with higher readiness to change may experience frustration and disappointment when their expectations for starting treatment promptly are not met. This may serve to reduce their readiness to change over time. Conversely, the passage of time prior to treatment entry, regardless of the duration, appeared to have a positive effect on those with lower baseline readiness, acting as a catalyst for positive action. This pattern of results was consistent within the Standard and Accelerated treatment-entry groups. Previous research has recommended that substance users with low motivation at the beginning of treatment should be identified in order for motivation enhancements to be implemented (Prochaska and DiClemente, 2005). The present results suggest the opposite to be true – waiting list participants with higher readiness to change early in the treatment process are more vulnerable to a loss of motivation and therefore may need to be targeted during the waiting period and offered interventions to maintain, or enhance, their initial motivation for change.

Hypothesis 2 predicted that waiting times would be more strongly associated with changes in readiness over the waiting period compared to patient characteristics. This hypothesis was supported with respect to changes on the Ambivalence and Taking Steps scales, although not for changes on the Recognition scale. Multivariate analyses demonstrated that waiting time was the only factor to predict changes to scores on the Ambivalence and Taking Steps scales over time. Waiting list participants whose Ambivalence and Taking Steps increased over the waiting period scores waited twice as long for treatment entry as those whose scores decreased over the waiting period. Increases on the Ambivalence scale may suggest that longer waits were associated with heightened conflict and uncertainty about changing heroin use. Those with longer waiting times may have more time to think about their problems and consider whether change is warranted. Longer waits were also associated with elevated scores on the

Taking Steps scale and hence greater reported action or intentions to act. This finding is encouraging and suggests that delays to enter treatment can be associated with behaviours intended to make positive changes in drug use, at least among some heroin users. Physical and psychological health variables and severity of heroin dependence did not differ across the change groups on the Ambivalence or Taking Steps scales showing that these factors were not important in influencing changes in readiness. The absence of statistically significant associations between patient characteristics and readiness change patterns parallels previous research in which individual characteristics have been weak or inconsistent predictors of motivation (Ryan et al, 1995). This may suggest that an individual's attitude to change (i.e. whether they desire change) is more important than any of the individual characteristics which they present to treatment with.

In contrast to the results for the Ambivalence and Taking Steps scales, increases on the Recognition scale over the waiting period were associated with higher baseline physical and psychological health scores (at the univariate level), although waiting time was not. This finding may suggest that recognition of heroin use problems may have been prompted by physical or psychological health problems. Relationships between motivation and health status have been reported in a number of previous studies of substance users (Nwakeze et al, 2002; De Leon et al, 2000a; Melnick, 1999). However, these relationships are often complex, depending on the types and severity of the variables examined. For example, psychological problems such as depression and anxiety may be related to a lack of insight of current problems which may make it difficult for drug users to perceive their health deterioration and hence the need for change.

### 4.5.4 Rates of treatment entry

The study found that approximately twenty per cent of the sample failed to enter treatment when a place became available. Although this figure is lower than pre-admission attrition rates reported in other studies of drug users (Hser et al, 1998; Ball and Ross, 1991; Stark et al, 1990), it still represents a substantial proportion of heroin users who will fail to be exposed to the benefits of treatment such as reductions in

substance use, improvements in health and reduced offending (Gossop et al, 2002b; Hall et al, 1998).

The hypothesis predicting that longer waiting times would be associated with lower rates of treatment entry was not supported, with a similar proportion of the Standard and Accelerated groups entering treatment. Even when the variable waiting times of the Standard group were examined separately, no statistically significant relationships between the length of the delay and treatment entry were found. This finding contradicts a number of studies which have demonstrated that attendance decreases as waiting periods increase in both drug and alcohol samples (Maddux et al, 1995; Dennis et al, 1994; Fleming and Lewis, 1987). The current findings are, however, consistent with a small number of studies where waiting times have not been associated with treatment entry (Donmall et al, 2005; Eriksen, 1986).

A possible explanation of the absence of a relationship between waiting times and treatment entry may be that the two-week waiting period of the Accelerated group was not sufficiently short enough to satisfy heroin users' need for help and promote treatment entry. Previous research in alcohol treatment settings have reported that waiting periods greater than 7-8 days substantially reduced the chances of initial attendance at services (Hyslop and Kershaw, 1981; Wanberg and Jones, 1973) and some studies have shown that patients scheduled for assessment after 24-hours of their first contact are less likely to show for intake interview compared to those scheduled on the same day (Festinger et al, 1995; Stark, 1992, Woody et al, 1975). Earlier treatment entry for the Accelerated group may have produced a different pattern of results.

### 4.5.5 Predictors of treatment entry

Readiness to change assessed at the beginning of the waiting period was not related to the likelihood of treatment entry, although readiness to change assessed at the time of scheduled treatment entry was. Higher Recognition scores and lower Ambivalence scores were reported among heroin users who successfully entered treatment compared to those who failed to attend. Previous research has shown that recognition of substance-related problems, defined with different measures, is a key step in treatment entry (Tsogia et al, 2001; Jordan and Oei, 1989; Tucker, 1995). A number of

investigators have found that many substance abusers will fail to recognise, deny or minimise their problems and will be unmotivated to seek help until their substance abuse reaches an advanced stage or overwhelming problems are experienced in several areas of their lives (Zhang et al, 2004; Lorch and Dukes, 1989). Lower Ambivalence scores among those who entered treatment may demonstrate that these heroin users have already weighed up the pros and cons of behaviour change and decided that change is warranted.

The positive associations between treatment entry and readiness to change assessed at the end of the waiting period, yet an absence of associations between the variables when readiness is assessed at the start of the waiting period, highlights the complexities of examining readiness which is temporally distant for the events it may be associated with. Relating SOCRATES scores to future events or behaviour (e.g. treatment entry three months after assessment) assumes that readiness is static. The current study has found that readiness is not a fixed phenomenon but is subject to change over time. It may therefore be unrealistic to expect treatment entry to be related to readiness which has changed since it was originally assessed. It may be that readiness is only associated with events and patient behaviours which occur temporally close to its assessment. The proposition that the SOCRATES may be less predictive over longer periods may help to explain the lack of associations between outcomes (e.g. reduction in drug use) and readiness assessed at treatment entry reported in a number or studies using the measure (Gossop et al, 2007; Rapp et al, 1998).

The Taking Steps scale was not related to treatment entry, although it must be noted that the scale reflects readiness for, or action towards, changing heroin use and not motivation for treatment. However, entering treatment is in itself an action designed to reduce drug use, this may suggest that the Taking Steps scale does not reflect the range of actions which drug users may employ to change their drug use.

Unadjusted bi-variate analyses also indicated that the frequency of crack cocaine and the frequency of heroin use assessed at the time of scheduled treatment entry were higher among those who failed to enter treatment. The higher frequency of crack cocaine and heroin use may suggest that these study participants are either too entrenched in procuring and taking drugs to enter treatment, or that they do not think

that treatment would be able to address their problems. Crack cocaine use has previously been found to reduce the likelihood of treatment entry among heroin users (Booth et al, 2003) and may be mediated by the concomitant problems associated with crack cocaine use such as greater risk-taking behaviours, criminality and psychiatric distress (Grella et al, 1995).

In the multivariate analyses, higher Recognition scores and lower levels of crack cocaine use were the only significant predictors of treatment entry, although these variables did not explain a great deal of variance in treatment entry status. It is likely that characteristics not examined within this study are more important in encouraging treatment entry. The quality of the initial assessment interview, for example, has been noted by number of investigators as influential in treatment entry (Hyams et al, 1996; Miller, 1985). This issue will be addressed in Chapter 5. The results indicate that heroin users with more severe substance abuse problems may need to be targeted early on in the treatment process to be provided with expedited entry into treatment, interim methadone prescribing or additional support during the waiting period to ensure that they successfully enter treatment and receive the help they require.

It is also interesting to note from the results that the frequency of non-prescribed methadone use was higher among waiting list participants who entered treatment than those who did not, although this difference failed to reach statistical significance. This finding may show that heroin users who successfully enter treatment are self-medicating with non-prescribed methadone during the waiting period in an attempt to begin to make changes in their heroin use prior to being prescribed methadone by the treatment service. This speculation is supported by the finding that the mean frequency of heroin use of those who enter treatment falls by approximately fifty per cent of the baseline levels.

In summary, the hypothesis stating that higher readiness at the end of the waiting period would be associated with a greater likelihood of treatment entry than demographic or substance use variables, was partly supported. Recognition assessed at the end of the waiting period was the only scale to successfully predict treatment entry, in addition to the frequency of crack cocaine use. While many studies examining predictors of treatment entry have focused on patient variables at the intake interview (i.e. at the

beginning of the waiting period), these results highlight the importance of assessing individual characteristics at different stages of the treatment process. Certain characteristics (e.g. substance use, readiness to change) may be subject to change, particularly when more prolonged waiting periods are experienced.

### 4.5.6 Changes in substance use over the waiting period

Hypothesis 5 predicted that longer waiting times would be associated with fewer reductions in substance use over the waiting period relative to shorter waiting times. The findings of the current study do not support this hypothesis. The longer waiting periods of the Standard group were in fact associated with a greater tendency to reduce the mean frequency of heroin use. These reported reductions within the Standard group may suggest that heroin users start making efforts to reduce their primary drug in preparation for treatment when lengthier waiting periods are experienced. This may also be associated with the factors which prompted treatment seeking such a health or financial concerns necessitating the need to reduce heroin use over time. While reductions in substance use prior to treatment have been reported previously (Rosengren et al, 2000; Tucker, 1995), the study findings contrast those of Brown et al (1989) who reported that the length of the waiting list was not associated with any greater or lesser tendency to change drug using behaviours. The absence of group changes among the Accelerated group may demonstrate that heroin users who know they are soon to start treatment may not see the need to initiate changes when substitute prescribing will soon begin.

Analyses of heroin outcomes at a case-by-case level revealed that a quarter of the sample (27.1%) decreased their baseline heroin use, over half (57.9%) maintained their baseline levels and 15.0% increased their use. Variations in the patterns of substance use over time have been reported in previous studies of waiting list participants (Donmall et al, 2005: Best et al, 2001; Brown et al, 1989) and demonstrate that delay for treatment has different effects on different substance users. Such a finding highlights the need for tailored interventions for some heroin users to counteract the negative consequences associated with waiting list participation.

A small number of study participants reported achieving abstinence over the waiting period. The rates of abstinence did not differ between the two treatment-entry groups in the current study. This finding contrasts those of Rosengren et al (2000) who reported that abstinence became more difficult to sustain with longer waiting periods. However, the results presented in the current study only included heroin users who successfully made changes in heroin use during the waiting period, it is not possible to assess how many attempted to change but failed in their attempts.

These findings suggest that although the waiting period (regardless of its length) is characterised by a continuation of heroin use at the same level as that reported at the initial presentation for treatment for many, it is reasonable to expect some to begin making changes to their heroin use prior to treatment entry, particularly when longer waiting periods are experienced. The need to maintain a drug habit during the waiting period and the continuing exposure to drug-using networks may make efforts to make positive change in heroin use difficult for some.

Although only a small number of study participants reported increasing their heroin use over the waiting period, this is still a matter of concern due to the risks of accidental overdose, needle sharing and other consequences of heroin use (DeGennaro and Zeitz, 2009; Hoffman et al, 2008). The increase in heroin use reported by twenty per cent of the Accelerated group may represent a last binge of heroin, either because they are entering treatment and know they will not be using heroin again, or because they have quantities of heroin which need to be consumed. Associations with drug-using networks may also encourage additional heroin use prior to treatment entry. Some treatment-seekers may feel that they have eliminate contact with such networks to promote their recovery and so spend additional time with them, and hence consume more drugs, prior to treatment.

Outcome response profiles relating to changes in the direction of heroin frequency over the waiting period found that heroin users who reduced the frequency of their heroin use had higher baseline heroin use (mean of 6.2 days use per week) and heroin users who increased their heroin use had the lowest baseline use (mean of 3.2 days per week). These findings contrast those of previous research which has shown that individuals with more severe heroin use problems find it more difficult than others to make

reductions in their use (Gossop et al, 2003). While these results are puzzling, they offer insights into the complexities of changes in heroin use which occur during treatment waiting periods. It may be that study participants with more severe heroin use problems sought treatment for financial reasons in that they could not longer afford to consume heroin at their usual levels, or that health factors or family conflict prompted the desire for change.

A large proportion of the sample reported using a range of different substances at the time of treatment seeking. Over half the sample reported the use of cannabis and alcohol, a third reported the use of non-prescribed methadone and over sixty per cent of the current sample reported the use of crack cocaine. Poly-drug use among treatment-seeking heroin users is common (Marsden et al, 2000) and high prevalence rates of crack cocaine use have been documented in methadone patients both before admission and during treatment (Gossop et al, 2003; Grella et al, 1995). Ball and Ross (1991), for example, reported pre-treatment cocaine use in half of all methadone clinic admissions studied. Crack cocaine use has been found to be a significant problem in terms of treatment prognosis with patients typically spending less time in treatment than patients not using cocaine (Rowan-Szal et al, 2000). Cocaine-using methadone patients also have higher rates of criminal involvement (Hall, et al, 1993), and have been reported to have more anti-social personality disorders and a greater risk of HIV infection than non-cocaine users (Grella et al, 1995).

Change profiles for substances other than heroin, found that the majority of heroin users reporting the use of non-prescribed methadone, crack cocaine and alcohol at baseline maintained the frequency of use at the same level over the waiting period although there was considerable variation in the patterns of changes in substance use during this period. None of these changes were associated with treatment-entry group membership. Between 15.0-30.0% of the sample reported increasing the frequency of at least one substance, other than heroin, over this period. Small, but statistically significant, reductions in the frequency of crack cocaine and non-prescribed methadone use were found over the waiting period within both treatment-entry groups. Nearly half (45.2%) of the non-prescribed methadone users reported abstinence from the drug at follow-up. Although it can be assumed that heroin use prompted the sample to seek treatment, a proportion of heroin users appear to be actively working to reduce their use of other

substances, particularly other opiates. No statistically significant changes in cannabis or alcohol use were reported over the waiting period. These may be substances which participants feel are less important to change in the short-term or the long-term.

### 4.5.7 Changes in heroin frequency and readiness to change

Hypothesis 6 predicted that increases in readiness scores over the waiting period would be associated with reductions in heroin use. In order to avoid problems with assessing the heroin use outcomes temporally distant from readiness as noted earlier, the current study assessed changes in heroin use over the waiting period as a function of changes in readiness over the same period. This choice of analysis failed to find any statistically significant relationship between the direction of change in heroin frequency (increased/remained the same/decreased) and changes in readiness on any of the three scales. This finding supports a number of previous studies which have failed to find a relationship motivation and substance use outcomes (Gossop et al, 2007; Rapp et al, 1998). The absence of a significant relationship between the variables may be associated with problems with the SOCRATES. The scale measures attitudes and stated intentions to change, however, several investigators have noted that stated intentions do not always translate into actual behavioural changes (Gossop et al, 2003). The measure may not therefore be appropriate for predicting outcomes.

Although there was no evidence of an association between changes in readiness and changes in heroin use over the waiting period, separate analyses found associations between baseline readiness and changes in heroin use. Reductions in the frequency of heroin use over the waiting period were associated with high baseline Recognition scores, thus supporting Hypothesis 7 which predicted that reductions in the frequency of heroin use over the waiting period would be associated with high baseline readiness scores. However, multivariate analyses revealed it was the waiting list participants whose frequency of heroin use did not change between the interviews who had the highest baseline Recognition scores. Changes in the frequency of heroin use over the waiting period were not associated with baseline Ambivalence and Taking Steps scores. This pattern of results is difficult to explain, but may suggest that high problem recognition may be an important factor in the ability to maintain the frequency of heroin use over longer waiting periods, even among waiting list participants with high baseline

heroin use**.** Those with more severe heroin use problems may recognise that they have a serious problem but may find it too difficult to make changes without the assistance of a formal treatment programme. Heroin users with lower baseline Recognition, on the other hand, may not fully realise that their heroin use is problematic because of its less frequent use, and not yet feel the need to change their behaviour. Relationships between problem recognition and substance use variables (frequency of heroin use, severity of dependence) have been reported in previous studies (Bell et al, 2005; Rapp et al, 2003) and have also been found to be an important factor in predicting treatment entry among drug and alcohol users (Finney and Moos, 1995; Pfeiffer et al, 1991). No relationships were found between baseline Ambivalence and Taking Steps scores and changes in heroin use over the waiting period.

Bi-variate analyses found that a greater proportion of women reported increasing their Recognition scores over the waiting period compared to men. Previous research has reported that gender differences in problem recognition, with females less open to acknowledging that their problems are related to substance use than males (Mangrum et al, 2006; Thom, 1987). However, the current study may show that taking an initial step towards change by seeking treatment, or making arrangements for childcare provision during treatment, may serve to enhance problem recognition to a greater extent in women than their male counterparts. This explanation is speculative as reports of gender evaluations in substance abuse literature are rarely made (Toneatto et al, 1992) often due to the small number of women in formal treatment programmes (Moras, 1998).

### 4.5.8 Waiting time expectations

The study found participants' expectations regarding waiting times were variable, with some expecting to wait a week for treatment and others expecting to wait up to two months. The degree of discrepancy between expected and actual waiting times was not related to treatment entry. Heroin users' whose expected waiting times were longer than their actual waiting times were just as likely to enter treatment as those participants whose expected waiting times matched their actual waiting times, or were less than their actual waiting times. However, there was a non-significant trend for those whose actual waiting times exceeded their expected waiting times to be less likely to enter treatment. A larger sample size may have revealed a stronger relationship between the variables.

The absence of a significant relationship between actual and expected waiting times within the current study conflicts with the findings of Thompson and Yarnold (1995) reported in the Literature Review, who found that patients were least satisfied with their care when waiting time was longer than they expected in medical settings. The results also fail to support the Disconfirmation Paradigm which states that customer satisfaction is determined by the magnitude and direction of the gap between expectations and perceptions of performance (Churchill and Suprenant, 1982). However, it must be noted that actual satisfaction with waiting times was not measured within the current study but implied from successful treatment entry. Satisfaction with a service may not be accurately reflected in the activity of entering treatment. Also, previous research was based upon general medical patients who may not be comparable to patients with heroin use problems. It is also not possible to determine whether the waiting list participants had been given any information about the length of the waiting period during the Brief Assessment, prior to the first research interview, which may have informed their waiting time expectations.

Although it was expected that individual and clinical factors, such as previous treatment experiences, would be related to waiting time expectations, in fact only age was a significant contributory factor. Older heroin users expected to wait the shortest amount of time (1 week) for treatment to start. While this finding is difficult to explain, the question 'how long do you expect to wait to start treatment' may have been answered according to the desires of starting treatment rather than actual expectations. Older heroin users may have reached a time in their life when finances and relationships have become more important than taking drugs and hence may be more committed to entering treatment and changing their drug use behaviours.

Hypothesis 9 predicted that changes in readiness over the waiting period would be associated with the degree of discrepancy between patients' expected and actual waiting times. Analyses supported this prediction and demonstrated that waiting list participants whose expected and actual waiting times were closely matched reported the greatest reductions in Ambivalence and Taking Steps scores over the waiting period compared to those participants whose expected waiting times were less than or more than their actual waits. Reductions on the Taking Steps scales among this sub-group of patients was an unexpected finding and may be an artefact of the research design rather a

genuine research finding. During the recruitment phase of the study patients were informed that they had a chance of receiving quicker access to treatment. Some of the study participants may have used this information to inform their expectations on waiting times and then coincidentally may have been randomised to the Accelerated group, thus fulfilling their expectations. Examination of the expected waiting times of the patients within this sub-group may shed more light on this finding. If the waiting list participants expected to enter treatment quickly they may have felt that action to change their heroin use was necessary when substitute prescribing would soon begin.

The reduction in Ambivalence scores among waiting list participants whose expected and actual waiting times corresponded is a positive finding and suggests that conflict and uncertainty are reduced when the service received is in line with the patient's expectations. Although waiting time expectations have not been previously researched within substance abuse populations, these findings suggest that meeting patient expectations regarding the length of the waiting period may promote a positive image of the service and engender trust and confidence in the patient that the service is a useful resource, responsive to their needs and which can assist them to make positive changes to their drug use. This may in turn enhance motivation for change.

Motivation has been related to compliance with treatment, treatment retention and drug use outcomes in a number of studies as presented in the Literature Review. A small number of studies have also shown that patient's pre-treatment expectations may have an impact on treatment outcomes. For example, a qualitative study examining participation in drug treatment suggested that a close matching of user expectations of the service with actual services provided encouraged compliance with treatment (Neale, 1998). In a recent study by Kuusisto et al (2011), patients' pre-treatment expectations regarding participation in a Twelve-Step programme were related to treatment retention and treatment effectiveness in terms of percent days abstinent at follow-up.
The relationships between patient expectations and outcomes reported in these studies may be mediated by patient motivation. It may be that a close matching of patient expectations and reality enhances motivation to change. Such findings offer the potential for treatment providers to enhance motivation during the waiting list by managing patient expectations of waiting times. This could be achieved by discussing patient expectations at the initial contact point to promote realistic expectations of

treatment waiting times. These recommendations will be discussed in greater detail in Chapter 5.

It must be noted that this study focused explicitly on the independent variables of waiting time expectations, readiness to change and treatment entry, no covariates were examined. It has been suggested that patient expectations regarding treatment may be influenced by the complexity of the patient's substance use problem, the more complex the problem, the greater the discrepancy between the patient's expectations and the treatment received (Kuusisto et al, 2011). The inclusion of substance use variables in future research examining the factors associated with patient expectations is therefore recommended to provide a clearer picture of the respective relationships.

## 4.6 Conclusions to Study 2

Study 2 permitted an examination of the time-sensitive relationships between readiness to change drug use and treatment waiting times. For a large proportion of the waiting list participants, waiting for treatment, regardless of the length of the waiting period was associated with reduced readiness to change. However, different patterns of change were observed within the sample which demonstrates that people respond differently to waiting for treatment and maintaining motivation over time may be just as important as generating it in the first place.

Contrary to expectations, longer waiting times were not associated with lower rates of treatment entry or to fewer reductions in substance use over the waiting period relative to shorter waiting times. Readiness scores at the end of the waiting period were associated with treatment entry but were not associated with changes in heroin use over the waiting period. Heroin users' expectations about the length of the waiting period were not associated with the likelihood of treatment entry but were associated with readiness change scores over the waiting period. The clinical implications of these findings will be discussed in Chapter 5.

Further research is needed to understand how treatment seekers respond to waiting periods and to more adequately explore how motivation changes as a function of placement on a waiting list. Understanding what motivates change in addictive

behaviours, as well as the nature of impediments to these changes such as waiting times, is important in developing interventions to help promote successful behaviour change. For example, if future research provides supportive evidence of a detrimental effect of waiting times on patient motivation, then efforts could be focused on assisting the individual to maintain or enhance their initial motivation for change. This may serve to prevent the ramifications of poor motivation such as treatment attrition and non-compliance reported in previous studies (Ryan et al, 1995; Simpson and Joe, 1993).

# CHAPTER 5: DISCUSSION

This final chapter assesses the extent to which the research programme has answered the research questions posed and its contribution to furthering our understanding of readiness to change and the effects of treatment waiting times. Consideration is given to the use of SOCRATES within the research programme and to a number of limitations of the findings of the research studies. This chapter will also discuss the clinical implications for the treatment of drug users and suggest recommendations on how treatment might be tailored to better meet the needs of drug users awaiting treatment entry.

## 5.1 OVERVIEW OF THE RESEARCH PROGRAMME

Waiting times have been identified as a potential barrier to treatment access among substance users (Neale et al, 2007). Little, however, is known about the nature of its effects on the motivation of drug users awaiting treatment entry. The main focus of the research programme was to examine the relationship between waiting times and readiness to change among heroin users requesting methadone out-patient treatment and how this relationship impacts on patient behaviour and treatment entry. The first study piloted the Stages of Change, Readiness and Treatment Eagerness Scale (SOCRATES) on a treatment population in order to examine its utility in detecting changes in readiness over time. The second study randomly assigned treatment seekers to waiting periods of different lengths (short or prolonged waits) and assessed changes in readiness over the course of the waiting period. The likelihood of treatment entry, patterns of substance use over the waiting period and patient expectations were examined as a function of the changes in readiness and the length of the waiting period.

## 5.2 DISCUSSION OF THE FINDINGS

### 5.2.1 The waiting period and readiness to change

While many studies have assessed the motivation of substance-using populations, few studies have examined how motivation changes over time or how these changes are related to factors in the treatment environment. No studies, known to the author, have systematically examined motivation among heroin users placed on a waiting list prior to treatment entry or how the length of the waiting period is related to the changes in motivation which may occur during this period.

Study 1 examined the relationship between readiness to change and waiting times retrospectively in a sample of heroin users at the point of treatment entry after a variable waiting period. The Ambivalence scale was the only dimension found to be associated with waiting times, with longer waiting times positively associated with greater conflict around changing drug use (or that shorter waiting times are associated with less conflict). No relationship was found between the length of the waiting period and the Recognition or Taking Steps scale scores. While the design of Study 1 does not allow us to assess whether the scale scores altered over the course of the waiting period, the results may indicate that longer waiting periods provide the heroin users with greater time to reflect on their drug use and question the implications of behaviour change leading to uncertainty and conflict about such behaviour.

Assessment of readiness among Study 1 participants found they entered treatment with 'medium' Recognition scores, 'medium' Ambivalence scores and 'medium' Taking Steps scores according to Miller and Tonigan's (1996) interpretative ranges. A closer inspection of the scale scores revealed considerable variability among the heroin users, with some denying, and others acknowledging, that they have a heroin use problem, with some experiencing uncertainty about changing their heroin use, while others do not, and with some making efforts to change their drug use, while others reported little activity in this area.

Among the waiting list participants in Study 2, the greatest proportion of the sample requesting treatment (start of the waiting period) reported 'low' Recognition of their

problem, ‘medium’ Ambivalence and ‘low’ Taking Steps to change their behaviour. While considerable variation in the changes in readiness scores were observed over the waiting period, group means revealed that those heroin users scheduled to enter treatment after a short delay (Accelerated group) reported reductions in both Taking Steps scores and Ambivalence scores. Waiting list participants entering treatment after a prolonged delay (Standard group) reported no statistically significant changes on these scales. Further analyses revealed heroin users whose Ambivalence scores decreased over the waiting period waited a significantly shorter period (24 days) than those whose scores increased (50 days). Similarly, heroin users whose Taking Steps scores decreased over the waiting period waited less time (24 days) than those who scores increased (49 days).

Study of the sub-groups representing changing patterns of readiness over the waiting period (increased, decreased or stayed the same) revealed that a sizeable proportion of both treatment-entry groups reported reductions on all three readiness scales between the start and end of the waiting period, a smaller proportion reported increases in readiness for change and some reported no changes between the two interviews. These patterns of changes over the waiting period, with some heroin users increasing, and some decreasing their scores on the three scales are consistent with a ‘spiral model of change’ proposed by Prochaska and DiClemente (1982). A number of other investigators have commented on the dynamic nature of motivation that can fluctuate over time and in relation to different situations (Vallerand and Thill, 1993;Reeve, 1992; Rosenbaum and Horowitz, 1983). However, it is not known whether these fluctuations in readiness may occur naturally, regardless of waiting list participation. Examining how readiness changes over time among heroin users with no current intentions of seeking treatment would allow further exploration of this contention.

The reduction in readiness scores among the Accelerated group demonstrates that changes can occur over relatively short waiting periods. The reductions on the Ambivalence and Taking Steps scales suggests that heroin users with short waiting periods are experiencing more willingness to change (reduced Ambivalence), but less propensity to take action (lower Taking Steps). Reductions on the Ambivalence scale may suggest that waiting list participants experienced less uncertainty and conflict regarding their heroin use with the knowledge that treatment was soon to start.

However, this same knowledge appears to have diminished their efforts to make changes to their heroin use. While this finding is difficult to explain, waiting list participants with short waiting periods may not perceive the need to change their drug use behaviour when they will soon receive substitute medication to replace their heroin use.

Although there is a paucity of research assessing changes in SOCRATES scores over time, reductions on the Ambivalence scale were also found in a study of treatment-resistant substance users who later presented for treatment (Daugherty et al, 2000). However, in contrast to the current study, Daugherty and colleagues found a reduction in Recognition scores and increases in scores on the Taking Steps scale. Although this study examined readiness among alcohol users in the period prior to treatment seeking and so is not entirely comparable to a waiting list sample of heroin users, it supports the findings that changes in readiness occur over short periods of time.

It was predicted that longer waiting periods would be associated with greater reductions in readiness scores over this period. The absence of statistically significant changes in readiness scores within the Standard group was somewhat unexpected and difficult to explain. The results may be taken to show that long waiting periods do not appear to have a significant effect on patient readiness. Waiting list participants may feel that they will not be able to make changes to their drug use without the assistance of treatment and it is therefore unnecessary to experience conflict about making changes when change is in the future. This may suggest that many heroin users have more important short-term priorities than their thoughts and activities regarding change, such as procuring and taking drugs. The reductions in Ambivalence may support this contention – when they know that treatment entry is close, waiting list participants begin to contemplate change**.**

Study 2 collected readiness data at the beginning and end of the waiting period. It is not known whether readiness levels fluctuated to a greater extent than that represented in the mean score analyses within the Standard group. Readiness assessed at the end of the waiting period may have returned to the level reported when they first presented to treatment and thought change was imminent. Assessment of readiness over the course

of the waiting period, rather than just at the beginning and end, may present a clearer picture of the changes which occur within this group.

The absence of changes on the Recognition scale over the waiting period within both treatment-entry groups may demonstrate that this dimension is more stable over time and less subject to external influences such as waiting time than the other dimensions. It may alternatively suggest that this dimension is more important for initiating the desire for change and promoting treatment seeking but less involved in the actual change process than previously assumed. If this is the case, then the Recognition scale of the SOCRATES may not adequately reflect the factors involved in the change process.

It must be noted that the SOCRATES asks about current motivational attitude about making changes to drug use. Within Study 2, the SOCRATES was initially administered after the first clinical contact with the service, immediately after the treatment seekers were informed that a waiting period was inevitable. Information that they would not receive immediate help may have disappointed many, or roused doubts about changing their drug use, which may in turn have affected their responses to statements on the measure. Scores on the SOCRATES in this instance may not have accurately reflected the readiness of the participants. Such a contention highlights the importance of taking the timing and contextual factors surrounding the administration of the SOCRATES into account. Although Prochaska and DiClemente were explicit about leaving contextual factors out of the Transtheoretical Model, it is likely that motivation is affected by events and emotions surrounding its use.

Although the association between waiting times and Ambivalence is not particularly strong within Study 1, and is based on correlational analyses, it serves to corroborate the findings of Study 2 and may suggest that this dimension of readiness is affected by waiting periods prior to treatment entry to a greater extent than the other dimensions. These findings may highlight the need for treatment services to identify and address ambivalence for change among treatment seekers at their first clinical contact and at other times during the waiting period when lengthier waits are necessary.

It is interesting to note, although perhaps not surprising, that the Recognition and Taking Steps profile ranges among the treatment sample in Study 1 are somewhat

higher than those reported among the waiting list sample at the start of the waiting period in Study 2. Study 1 included only those treatment seekers who successfully entered treatment after the waiting period. These patients had already endured a waiting period of up to three months and several assessment procedures prior to treatment entry. It may be the case that only the more motivated treatment-seeking heroin users were able tolerate the delay for treatment entry and thus were included in the study sample. Treatment seekers with lower levels of motivation may not have been able to tolerate the wait, failed to enter treatment, and were therefore not included in the study. The heroin users in Study 2, on the other hand, were recruited to the study at the beginning of the waiting period and therefore included those who would go on to successfully enter treatment and also those who would not. Some of these treatment seekers may have presented to treatment during a period of crisis or may have been coerced into treatment by others and may not be as committed to alter their drug use or entering treatment at this point in time.

The findings reported support the first stage of the conceptual framework presented in Chapter 1 which depicted a relationship between waiting times and readiness to change. The research programme demonstrated that waiting for treatment is associated with changes in readiness in a large proportion of the sample, although unexpectedly, shorter waiting times were associated with a greater reduction in readiness over time relative to longer waiting periods. These findings demonstrate the transient nature of readiness to change, and suggest that treatment services should take advantage of treatment applicants' initial desire for change when they first present for treatment. Although readiness for change was not particularly high among the waiting list participants at the first presentation at the service, the passage of time, even when this was only a short period, reduced patients' recognition of their problems and their propensity for action designed to change their drug use. Case-by-case analyses revealed that people experience the waiting period very differently. More research is required to examine how waiting times and readiness to change interact among treatment seekers assigned to waiting lists.

### 5.2.2 Waiting time and treatment entry

The length of the waiting period in Study 2 was not related to treatment entry, with similar proportions of the Standard and Accelerated groups starting treatment. While these findings are consistent with a small number of studies which have also failed to find an association between waiting times and treatment initiation (Donmall et al, 2005; Eriksen, 1986), they contradict a larger body of research which has demonstrated that the longer substance users have to wait the less likely they are to enter treatment (Hser et al, 1998; Leigh et al, 1984; Raynes and Warren, 1971). Differences in the findings of the current study and previous studies may be a result of the different ways waiting times have been defined and measured. The current study defined waiting times as the period between the first presentation at the service and the start of treatment (Best et al, 2002; Hser et al, 1998; Orne and Boswell, 1991). Some of the previous studies have defined waiting times as the amount of time between initial client referral and first clinical assessment at the treatment service (Festinger et al, 1996; Gariti et al, 1995; Wanberg and Jones, 1973). These periods of time may have different meanings to treatment seekers. For example, substance users who seek referral from a G.P. will have to initiate the forces which prompted initial treatment seeking a second time when a clinical assessment at a treatment service is provided, which may prove to be too difficult for some.

The conceptual framework for the research programme was based on the premise that readiness to change mediates the relationship between waiting times and treatment entry which has been frequently reported in the substance abuse literature. The absence of an association within Study 2 largely invalidates the conceptual framework and the role of readiness to change in mediating the specified outcome. However, it must be noted that the waiting time of those who entered treatment was shorter than those who did not enter treatment, although this difference did not reach statistical significance. This may suggests that the size of the study sample, and the resulting discriminatory power of the statistical tests employed, may have contributed to the absence of significant associations between the variables under investigation. This will be addressed further in the reflections on the research programme section. The absence of a significant relationship between waiting times and treatment entry may have also have arisen from design problems with the 14-day waiting period being too long to satisfy treatment

seekers need for treatment and initiating change. The relationships between waiting times and a second outcome measure (changes in substance use) will be discussed in Section 5.2.4.

### 5.2.3 Readiness to change and treatment entry

Higher Recognition scores and lower Ambivalence scores, assessed at the end of the waiting period, were associated with treatment entry, although only Recognition scores remained a significant predictor of treatment entry status in multivariate analyses. Supportive evidence for the role of Recognition in treatment entry is provided by a number of studies which have found problem recognition, assessed with a variety of measures, was one of the most influential factors in initiating the treatment process entry (Tsogia et al, 2001; Jordan and Oei, 1989). Without high problem recognition heroin users may fail to see the extent of their heroin use problem and hence the need for treatment. Recognition (and frequency of crack cocaine use) accounted for only a small amount of variability in treatment entry in Study 2. Other factors not assessed within the study are likely to impact on the likelihood of treatment entry.

The relationship between treatment entry and lower Ambivalence found in the bi-variate analyses suggest that heroin users are less likely to enter treatment when they are experiencing a high degree of conflict about changing drug use. As the Ambivalence scale represents the weighing up of the pros and cons of behaviour change, not entering treatment may reflect the perceived advantages of continued heroin use outweighing the advantages of changing heroin use. However, it must be noted that this Ambivalence was recorded after they had missed their Full Assessment appointment. The reported conflict may have arisen from failing to enter treatment when a place became available and hence missing an opportunity for change. The collection of qualitative information from waiting list participants about their feeling towards change would help to clarify the relationship between readiness and treatment entry.

While readiness assessed at the end of the waiting period was associated with treatment entry, readiness assessed at the start of the waiting period was not. This finding highlights the importance of the timing of the assessment of readiness, or other measures of motivation, when examining relationships between readiness for change

and outcomes. As noted in Study 2, readiness is subject to change over time and in some instances readiness and outcomes are only related when they are assessed temporally close to each other. The conceptual framework predicted a relationship between readiness and treatment entry. The existence of this path has been partly supported by the statistical analyses, although only when readiness was assessed at the same time as treatment entry.

### 5.2.4 Waiting times and substance use

Previous waiting list research has generated minimal data on the behaviours of substance users during the period between treatment seeking and treatment entry. The study sample demonstrated variations in the patterns of heroin use over the waiting period. While over half of both treatment-entry groups reported no changes in their heroin use over the waiting period, twenty per cent of the Accelerated group and six per cent of the Standard group reported increasing their heroin use, and thirty-five percent of the Standard group and twenty-two per cent reported decreasing their heroin use. While these findings show that the waiting period, regardless of its length, is not characterised by a deterioration of drug use as reported in some previous studies (e.g. Urschel et al, 1991), it does show that a large proportion of waiting list participants are still exposed to the problems which prompted their initial treatment seeking efforts. Stability of drug use over the waiting period should therefore not be seen as a positive finding. While it is promising to see that a proportion of the waiting list participants do start to make changes to their heroin use during the waiting period, the finding that a proportion of the Accelerated group increased their heroin use over the two-week waiting period is a matter of concern due to the risks of accidental overdose and risk-taking behaviours associated with excessive heroin use (Darke et al, 2006). Increases in heroin use over the waiting period may reflect a perceived final heroin binge prior to entering treatment, either because the treatment seekers believe they will no longer use heroin once substitute prescribing begins or because they possess quantities of heroin which they feel need to be used prior to quitting drugs. This increased heroin use over the waiting period may make the treatment induction phase more difficult when heroin abstinence is required for a period before dose titration begins.

Study 2 predicted that longer delays would be associated with fewer reductions in substance use, however, this association was not detected. Comparison of the mean changes in the frequency of heroin use between the treatment-entry groups found that the longer waiting periods of the Standard group were in fact associated with reductions in the frequency of heroin use over the course of the waiting period, while the frequency of heroin use was unchanged within the Accelerated group. The reasons that prompted treatment seeking (e.g. financial or health reasons) may have necessitated the need to reduce heroin use on their own when treatment entry was not imminent within the Standard group. The absence of reported reductions in the Accelerated group may be due to heroin users anticipating that heroin use will reduce with the aid of substitute prescribing within a short period of time.

Analysis of the use of other substances over the waiting period found the greatest proportion of both treatment-entry groups reported maintaining the frequency of non-prescribed methadone, crack cocaine, cannabis and alcohol use over the waiting period. There was no difference in the reported changes between the Standard and Accelerated groups. Lack of changes in substances other than heroin may demonstrate that treatment seekers do not feel that their use of other substances is problematic and therefore do not need to change them. Pre-admission use of one or more illicit drugs in addition to heroin have been reported in large proportions of methadone patients (Dunteman et al, 1992; Hubbard et al, 1989) and continued drug use during methadone treatment has been reported in up to seventy per cent of patients (Best et al, 2000; Belding et al, 1998; Sunjic and Howard, 1996). Those patients who continue to use other drugs during treatment have been reported to have generally poorer treatment outcomes than those who abuse only heroin (Weiss et al, 1988). This poly-drug use prior to, and during, treatment is also a matter of concern as multiple drug use has been related to heroin overdose (Darke et al, 1996) and HIV-transmission risk (Grella et al, 1995).

The relationship between waiting times and substance use supports the conceptual framework for the research programme, although the relationship between the two variables was not in the predicted direction. Longer waiting periods were associated with reductions in heroin use, while the frequency of heroin use remained largely unchanged among participants with shorter waiting times. The length of the waiting

period did not significantly impact on the levels of the other substances consumed by the study participants.

### 5.2.5 Readiness to change and substance use

Changes in heroin use over the waiting period were not associated with changes on any of the three readiness scales. Although this is an unexpected finding, it corroborates a number of other studies which have also failed to detect relationships between motivation and substance outcomes (Gossop et al, 2007; Rapp et al, 1998). While it was assumed that the absence of findings within these previous studies was the result of assessing motivation at a temporally distant time to the assessment of substance outcomes, using change measures for heroin use and readiness levels also failed to detect a relationship between the variables. The SOCRATES assesses self-reported intentions and behaviours. The observation that these do not correspond to actual substance use in this research programme may demonstrate the inconsistent nature of the stated intentions and behaviours concerned with making changes. Callaghan et al (2007) stated that "a central and defining feature of addiction is the disjunction between consciously expressed intentions or attitudes and corresponding addiction behaviours".

An examination of the relationship between heroin use over the waiting period and baseline readiness scores found reductions in the frequency of heroin use were associated with higher baseline Recognition, Ambivalence and Taking Steps scores. It appears that those with greater problem recognition, higher ambivalence about change and those who take action to change their heroin use are more likely to report changes to their heroin use over the waiting period. This readiness may have prompted treatment seeking and it appears that in this instance high Taking Steps scores are translating into behaviour (i.e. reductions in heroin use). Waiting list participants who increased their heroin use over the waiting period reported lower baseline readiness scores on all three scales. Increased heroin use among waiting list participants with lower problem recognition, less conflict about their drug use and who are not engaging in activities to change drug use, may represent a final binge prior the anticipated reduction in heroin use when treatment begins A lack of insight into their heroin use problems may prevent them from seeing the problems associated with this increased use.

The presence of a relationship between baseline readiness levels and changes in heroin use over the waiting period, but an absence of a relationship between changes in readiness and changes in heroin use over the same period, is quite difficult to explain. The findings may suggest that the readiness which prompted the initial treatment seeking is the most powerful predictor of change, while the changing patterns of readiness observed over the waiting period are less influential in promoting change. However, it must be noted that the assessment of readiness at the end of the waiting period represents readiness at a particular moment in time. These readiness levels may reflect feelings about entering treatment or failing to enter treatment. Assessing readiness levels at other time points during the waiting period may demonstrate a different pattern to those when assessment is only at the start and end of the waiting period.

This pattern of results contrasts the earlier findings which demonstrated that baseline readiness had no impact on treatment entry, while readiness assessed at treatment entry was related to successful treatment entry. Readiness appears to have a differential effect on the specified outcomes and it appears that the timing of the assessment of readiness is important in detecting relationships between the variables. This may once again reflect the transient nature of readiness over time.

The relationship between changes in heroin use and baseline readiness scores may be taken as evidence that the SOCRATES is capable of predicting future outcomes. Those associated with the Transtheoretical Model have been reluctant to suggest that the model has significant predictive power, particularly when only the Stages of Change element of the model is used (Velicer et al, 1996). However, many still believe that the model has predictive power and given that the model claims to contribute to the understanding of behavioural change some believe that this is not an unreasonable expectation (e.g. Whitelaw et al, 2000). Previous research has produced mixed results regarding the predictive utility of the SOCRATES (Chavez et al, 2003; Daugherty et al, 2000), with some studies reporting that readiness for change did not predict less frequent use of illicit opiates one year after treatment intake (Gossop et al, 2007) or alcohol use among alcohol patients over time (Hewes and Janikowski, 1998; Campbell, 1997). Inconsistencies in the predictive value of other stage-based measures have also been reported (Prochaska et al, 1994; Heather et al, 1993).

The conceptual framework proposed that the relationship between waiting times and substance use outcomes would be mediated by readiness to change, that is, the length of the waiting time would influence changes in readiness over the waiting period and these changes would in turn influence patterns of substance use over this time. According to this pathway, a relationship between substance use and readiness to change cannot be confirmed. Although Study 2 found that baseline readiness levels were related to changes in heroin use over the waiting period, this is not how the framework presented the proposed relationship.

### 5.2.6 Waiting time expectations, readiness to change and treatment entry

There has been an absence of research examining the expectations which substance users hold regarding the length of the waiting period or how these expectations are related to readiness to change drug use. It was predicted that waiting list participants who experienced waiting times longer than they expected would be less likely to enter treatment, and also that this group would demonstrate reductions in motivation over the waiting period. The study demonstrated that treatment seekers do hold expectations about the length of the waiting period which they may be expected to endure, although the discrepancy between heroin users' actual waiting times and expected waiting times was not related to treatment entry. Heroin users whose actual waiting times were longer than they expected were no less likely to enter treatment than those whose actual waiting times were similar, or shorter, than they expected.

Expectations of the length of the waiting period were found to be related to changes in readiness over the waiting period. The greatest reductions in Ambivalence scores were reported among waiting list participants whose expected waiting times matched their actual waiting times. This group also reported the greatest reduction in Taking Steps scores over the waiting period. The reduction in Ambivalence scores is a positive finding and highlights the importance of treatment services meeting patient expectations in order to encourage motivation. Meeting patient expectations may contribute to a positive appraisal of the service and give patients confidence in the capability of the service to assist them in their change process. Reductions on the Taking Steps scale among patients whose expected and actual waiting times matched, demonstrates that matching patient expectations does not encourage activity associated with changing

drug use. These heroin users may have felt that their previous efforts to change drug use were no longer necessary when substitute prescribing was soon to begin.
While much remains to be determined regarding the association between waiting time expectations, patient motivation and treatment entry, further research is needed to examine the source of patient expectations and how these can be modified by treatment providers to reduce unrealistic expectations and the disappointment that ensues when expectations are not met. If a relationship exists between pre-treatment waiting time expectations and motivation, then influencing patient expectations by making them more compatible with treatment reality should be made part of the treatment provision. This could be achieved by providing treatment seekers with accurate information about the length of the wait prior to treatment at the initial contact with the treatment service.

The conceptual framework proposed relationships between waiting times expectations, readiness to change and treatment entry. Although a relationship was found between waiting time expectations and readiness to change over the waiting period, the absence of a relationship between waiting time expectations and treatment entry fails to support the meditational role of readiness within the proposed pathway.

### 5.2.7 Summary of the conceptual framework results

Study 2 tested a conceptual framework to account for the relationships between waiting times, readiness to change, treatment entry and changes in patterns of substance use. The study hypothesised a mediational role for readiness to change in the relationship between waiting times and outcomes previously reported in the substance abuse literature. In order to examine whether readiness to change was a mediator between the waiting times and outcomes the presence or absence of the various paths in the mediator model were tested.

The first part of the framework assessed the relationship of the independent variable (waiting time) on the mediator variable (readiness to change). The presence of this path was supported – a relationship was found between the length of the waiting period (short or long wait) and changes in readiness over this time. The mediator variable (motivation) should also affect the dependent variable(s) (treatment entry and changes in substance use). A relationship between readiness to change and treatment entry was

detected, although no associations were found for the relationship between motivation and changes in heroin use. The third path in the framework should see an effect of the independent variable (waiting time) on the dependent variable (treatment entry) when the mediator variable (motivation) is excluded. No relationship was detected between waiting times and treatment entry, although a relationship was detected between waiting times and substance use. Examination of the path between expectations, readiness and treatment entry found that waiting time expectations were related to readiness to change, but were not related to treatment entry. A limited number of patient factors were associated with some of the variables assessed.

Although a number of paths within the framework were supported, the absence of other paths between the variables means that a mediational role for readiness cannot be confirmed. The length of the waiting period was related to changes in readiness over this period, but this relationship does not appear to influence the specified outcomes. While both waiting times and readiness were associated with outcomes, they were not associated with the same outcomes – waiting time was related to changes in heroin use, but was not related to treatment entry, while readiness to change was associated with treatment entry and waiting time expectations but was not related to changes in substance use. The pattern of results from the testing of the different pathways within the conceptual framework is quite complex. The absence of the predicted relationship between waiting times and treatment entry was unexpected and may reflect problems with the size of the sample in Study 2. This problem may have impacted on the other relationships examined and will be discussed in the next section. Further testing is required to clarify the nature of these relationships.

## 5.3 REFLECTIONS ON THE RESEARCH PROGRAMME

This section of the Discussion reflects on the design and data collection process of the research programme. It will examine some of problems associated with the research which may have contributed to the unexpected findings, or the absence of expected findings, and will make suggestions regarding improvements which could have been made with hindsight.

### 5.3.1 Constraints of the Department of Health Study

While the larger cohort waiting list study discussed in Chapter 4 provided an opportunity for the current research programme to be conducted and served to guide the approaches and measures employed, it also imposed a number of constraints and limitations which may have compromised the findings of Study 2.

Prior to the commissioning of the larger cohort study there were concerns surrounding the existence of extensive waiting times in drug treatment services in the UK. Given the social costs and individual impairment associated with heroin use, the Department of Health wanted to increase the number of drug users in treatment. One way to achieve this was to reduce the length of drug treatment waiting lists and increase the number of drug users each service could see. The main aim of the larger cohort study was to assess the impact of reducing the length of waiting times prior to treatment entry on the likelihood of entering treatment once a place became available and successfully retaining patients in treatment. Randomisation of treatment seekers to either a short or a more prolonged waiting period was considered to improve upon the design of previous waiting list studies by randomly distributing individual and substance use characteristics between the groups so that such differences would not impact on the relationships examined.

Sixty-eight per cent of the 182 heroin users recruited to the larger cohort study (91 in each treatment-entry group) started treatment after the waiting period, with a greater proportion of the Accelerated group entering treatment compared to the Standard group (77.0% versus 59.0%). An examination of the patient characteristics at the first research interview revealed that patients who failed to start treatment were more likely to use crack cocaine, and use it more frequently, than those patients who successfully entered treatment. All patients who successfully started treatment were followed up at three-monthly intervals over the course of a year. Slightly fewer patients from the Accelerated group were retained in treatment at each follow-up period, although the difference between the groups was not statistically significant. Randomisation to the Accelerated group was associated with fewer patients using drugs and patients using smaller quantities of drugs, while randomisation to the Standard group was associated with reductions in the frequency of drug use over the waiting

period. A large proportion of the Standard group who did not start treatment cited the waiting list as a factor in their non-return. This was not cited by any of the Accelerated group who failed to enter treatment. In summary, the larger cohort study found that reducing delays prior to treatment was associated with successful treatment entry, although it did not improve treatment retention. The Executive Summary of the larger cohort study can be found in Appendix 11.

The significant relationship found between rates of treatment entry and the length of the waiting period in the larger cohort study contradicts the results of Study 2 which failed to demonstrate the effectiveness of Accelerated treatment entry, in terms of enhanced treatment initiation rates, relative to Standard treatment entry. Even when the waiting period was analysed as a continuous variable rather than the dichotomous variable (short or prolonged waiting periods) no relationship was found. The sample size of the two studies was the only factor which differentiated them, with Study 2 comprising forty-nine fewer participants than the larger cohort study. As Study 2 required motivation data at two data collection points, only study participants who could be located and interviewed at follow-up study were included in the analyses. Attrition from the waiting list and difficulty contacting study participants resulted in a smaller sample than that which was available at recruitment. The impact of this was not fully realised until statistical analysis for the research programme began. As the main objective of the larger cohort study was to assess rates of treatment entry, obtaining follow-up data was not such a priority. Treatment entry data was available within the treatment service for all 182 study participants, thus providing a larger sample size to examine the main research objective. It therefore seems likely that the waiting time intervention was effective in Study 2 but that the study sample was too small to establish the efficacy statistically. Recruitment numbers were based on the requirements of the larger cohort study and there was no possibility of collecting more data at the end of the recruitment period for the purposes of the current research programme. Although the size of the sample in Study 2 met the sample size calculation requirement, this calculation was based on the testing of the study hypothesis predicting greater changes in readiness among the Accelerated group relative to the Standard group. It now seems likely that this sample size was insufficient to detect differences in the rates of treatment entry between the treatment-entry groups.

The research programme also failed to find a statistically significant relationship between waiting time expectations and treatment entry, however analysis of this relationship in the larger cohort study found that waiting list participants whose waiting times were the same as or less than they expected were more likely to enter treatment than those participants whose waiting time was longer than they expected. Future research would be wise to perform sample size calculations on each of the hypotheses tested and employ larger sample sizes to minimise the power problems associated with patient attrition. The collection of better contact details at recruitment may also assist in improved follow-up rates. This will be discussed in greater detail in the Recommendations for future research section.

### 5.3.2 Reliance on quantitative data

A further constraint of the larger cohort study was the reliance on quantitative data collection. Although this was imperative for the collection of data regarding substance use, offending behaviour and health and psychological functioning over the waiting period, it prevented the examination of other factors which may be relevant for examining the relationship between waiting times and motivation to change. As this relationship has not been previously examined, qualitative research that explores the patients' understanding of what motivates them to seek treatment, and questions concerning the experience of waiting for treatment, would have added value to the research findings. By designing a set of questions for the study we had in effect decided in advance of data collection what issues were important. While this was acceptable for the larger cohort, it limited the information available for the thesis.

Inadequate planning prior to the design of the research interview, and a focus on the needs of the larger cohort study rather than those of the research programme, meant that the opportunity to access novel information was lost. The perspective of substance users remains largely ignored in research conducted in treatment services (Carlson, 2006; Tsogia et al, 2001), although researchers have noted that "patient perspectives on treatment may have a role in treatment outcomes and should be explored as a dimension of the treatment process" (Lee et al, 2007). The perspectives and opinions of drug users would offer an intimate understanding of how shorter waiting times are received and how effective they were in resolving barriers to treatment.

### 5.3.3 The measurement of motivation

Although the SOCRATES fulfilled its intended purpose - to detect changes in readiness over time - some of the findings were difficult to explain. The use of a second measure of motivation may have proved useful to validate the findings. However, the inclusion of a second measure of motivation would have been problematic as other measures are based on different dimensions of the construct making comparisons between the two sets of results difficult.

Other problems with the research design such as the use of the Standard and Accelerated treatment-entry groups and the length of the waiting periods within these groups also raised issues which had not been anticipated. These will be discussed in the Limitations section.

## 5.4 THE USE OF THE SOCRATES IN THE RESEARCH PROGRAMME

The SOCRATES is the one of the most widely used instruments for measuring readiness to change, and while it has been extensively used with substance users, only a small number of studies have used it to assess changes in motivation over time. The absence of such longitudinal data necessitated piloting the instrument using repeated administrations to ensure it was capable of detecting changes in readiness over time in heroin users.

### 5.4.1 Applicability of the SOCRATES to drug users and waiting list participants

The main strength of the SOCRATES in this research programme was its capability in detecting changes in readiness over time in study participants assigned to a waiting list and also to those entering and participating in methadone treatment. In the Pilot Study changes in readiness were observed on all three scales between treatment intake and the three- and six-month follow-up points, and statistically significant changes were found on the Recognition and Ambivalence scales between intake and the three-month follow-up interview. In Study 2, changes were also observed on all three scales over both short and more prolonged periods of time, although statistically significant changes were only

recorded for the Ambivalence and Taking Steps scale scores over a two-week waiting period.

A number of commentators have suggested that because the SOCRATES was developed on an in-patient alcohol treatment sample it may not be sensitive enough to fully capture aspects of motivation among drug users. However, evidence for this proposition within the current research programme is lacking. The SOCRATES could detect changes in readiness in drug-using populations and readiness was also found to be related to treatment entry and changes in heroin use within this population over the waiting period. An absence of reported mean changes on the Taking Steps scale reported in Study 1, and on the Recognition scale within Study 2, may be seen to demonstrate that the measure may not be sensitive to detect subtle differences on this dimension among heroin users. However, it is likely that these findings reflect problems associated with using mean scores to assess change as case-by-case analyses in both studies revealed changes in scale scores over time. An absence of statistically significant relationships between certain dimensions of readiness and some of the variables examined may be the result of inadequate sample sizes rather than the measure not being relevant to drug-using populations. This problem will be discussed in greater detail in Section 5.5.2. Burrow-Sanchez and Lunberg (2007) conducted the only previous study, known to the author, which assessed motivation among drug users assigned to a waiting list. Findings from the analysis of the factor structure of the SOCRATES on waiting list participants also demonstrated that the measure can be useful with samples of adults waiting for treatment for which alcohol is not the primary drug of abuse.

The research programme suffers from the fact that few studies have examined changes in readiness over time which meant that the findings could not be adequately placed in the context of previous research. However, the use of the SOCRATES in this research programme provided a meaningful way to segment the process of change into separate dimensions and increase our understanding of motivation as a multi-faceted concept. The findings support additional exploration and evaluation of the measure to assess change in heroin users and in waiting list participants, and other research that explores the process of intentional change.

Despite the strength of the SOCRATES in measuring changes in readiness over time, the research programme has drawn attention to a number of problems with the measure.

### 5.4.2 Problems with the interpretive ranges

The interpretative ranges provided by the authors of the SOCRATES are based upon mean readiness scores collected from a large sample of alcohol users starting treatment as part of Project MATCH research trial (Project MATCH Research Group, 1993). Mean scores obtained in other studies using the measure are interpreted relative to this sample of substance users. It may therefore be necessary to question the applicability of these interpretive ranges for drug-using populations or for waiting list participants. The current research programme has shown that readiness scores of waiting list participants are somewhat lower than the readiness scores of heroin users entering treatment. As previously mentioned, it may be expected that heroin users who have successfully tolerated the waiting period may represent a more motivated group than those who have only just requested treatment. Although this contention does not detract from the usefulness of the measure in assessing readiness to change, additional research using the measure on different samples of waiting list participants and on drug users entering treatment would be useful to generate a different set of interpretive ranges for these specific groups and would offer additional information regarding the utility of this measure in these populations.

### 5.4.3 The Ambivalence scale

The interpretation of scores on the Ambivalence scale was problematic within the current research programme. Miller and Tonigan stated that ‘low’ Ambivalence should be interpreted in relation to the interpretive range of the Recognition scale. While this may be possible when administering the SOCRATES to a single subject (i.e. in a clinical setting), using it on study data sets proved to be less practical. Within the current research programme splitting the samples into sub-groups with low Ambivalence and high Recognition or low Ambivalence and low Recognition in order to interpret their readiness for change, would have reduced the sample sizes, compromising the chances of obtaining statistically significant relationships between the variables examined. This problem may suggest that the SOCRATES is more

suitable to use in clinical settings as opposed to research studies testing the relationship between multiple variables. Although several studies (e.g. Burrow-Sanchez and Lunberg, 2007; Chavez et al, 2003) have examined the factor structure of the three readiness scales, and many have used it to predict future treatment outcomes, none have attempted to provide additional descriptive information about the three scales. Greater clarification concerning the Ambivalence scale would aid with the interpretation of changes observed on this scale over time and the interpretation of relationships between the Ambivalence scale and the variables examined.

### 5.4.4 Collinearity of the SOCRATES scales

The positive correlations found between the Recognition and Ambivalence scores at the first research interview in both studies, may be taken to demonstrate that the study participants responded similarly to items on these two scales. This finding may suggest that the scales are not distinct dimensions of readiness to change. Although several studies have assessed the factor structure of the SOCRATES among drug users and waiting list participants (Burrow-Sanchez and Lundberg, 2007; Daugherty, 2000), the three-dimensional structure proposed by Miller and Tonigan (1996) has not always been found. Although the Taking Steps scale has frequently been identified, support for the Ambivalence and Recognition scales has not been consistent (Gossop et al, 2007; Figlie et al, 2005; Zhang et al, 2004) and the two scales have sometimes been combined into a single factor called 'AmRec' (Figlie et al, 2005; Maisto et al, 1999). Results regarding the scales should therefore be interpreted cautiously. However, it must be noted that the Recognition and Taking Steps scales in the current research programme also showed positive correlations in both studies and the Taking Steps and Ambivalence scales were positively correlated in Study 1. Collinearity of all three scales may therefore suggest an overlap of some of the factors within each dimension, which may present a problem in interpreting the results. These findings highlight the difficulties of measuring different dimensions of the same concept and while this may call for a revision of some of the statements on the SOCRATES, it may be necessary to consider whether different dimensions of a construct can ever be truly independent of each other.

### 5.4.5 Omissions of the SOCRATES

The research programme noted a number of omissions on the SOCRATES, particularly on the Taking Steps scale. Statements on the Taking Steps scale fail to recognise that seeking, entering, or participating in treatment are actions designed to change drug use. The absence of changes on the Taking Steps scale in Study 1 may be taken to demonstrate that the treatment participants were engaging in the same level of activities to change their heroin use as those reported at treatment entry. Similarly, the Accelerated group in Study 2 reported reductions in mean Taking Steps scores demonstrating that they were engaging in fewer behaviours to change their heroin use than that reported at the first contact with the service. As the scale does not contain specific statements regarding attempts to enter treatment or activities engaged in within the treatment setting, the findings may not accurately represent the activities of the study participants. The findings on the Taking Steps scale should therefore be interpreted cautiously. Findings regarding this scale should be viewed as a product of the statements posed on the scale by the authors rather than actions designed to change drug use.

### 5.4.6 Missing data

The lack of instructions from the authors on how to deal with patients with missing SOCRATES scores meant that a small number of study participants were excluded from the analyses, thereby reducing the sample size of both studies and potentially constraining the ability to examine some of the variables under investigation reliably. There are several methods in empirical research to deal with missing data. One frequently used method involves substituting the missing value with the group mean, as recommended by Tabachnick and Fidell (2001). As some patients in the research programme had missing data at two interview points, mean substitution in these instances would have failed to show the true nature of changes in motivation over time and distorted the results. The provision of instructions from the authors on how to deal effectively with missing data on the measure is therefore recommended.

It must be noted that this research programme focused on only one component of the Transtheoretical Model, the Stages of Change. Other components of the model,

including the Processes of Change, are believed to be responsible for movement through the Stages of Change (and hence changes of the SOCRATES scale scores). The absence of significant results on some of the variables considered within this research programme, and within other research studies, may be the result of failing to utilise all the elements of the model.

Assessment of motivation presents a significant challenge and there is clearly much more to learn about the process of change and how individuals go about creating and stabilising a new behaviour and abandoning an old one. Intrinsic (e.g. internal thoughts and feelings) and extrinsic (e.g. coercion from others) factors are all believed to contribute to a person's motivation to implement behavioural change. Although it would be impossible to capture all of these aspects of change in one measure, the SOCRATES has proved useful within this research programme to indicate where a person is in his change process at different points in the process of seeking and participating in treatment. Whether the three dimensions of readiness accurately reflect the change process is open to debate.

## 5.5 OPERATIONAL AND DESIGN LIMITATIONS

The study has a number of limitations which need to be addressed.

### 5.5.1 Generalisability of the findings

There are some limitations to the generalisability of the study findings as a result the systems operating within the treatment service where the research programme was conducted, the exclusion criteria set within the studies, and the populations assessed. Conducting research in a clinical setting required a flexible approach to work around the policies already in operation within the service. These service policies had a significant impact on the scope of recruitment to the study. For example, as the service already operated a priority system according to which heroin users with severe and more pressing needs would have expedited entry to treatment, a large number of treatment seekers at the service could not be randomised to a treatment-entry group in Study 2 and therefore had to be excluded from study participation. Heroin users recruited to the study were those receiving the normal entry process used within the treatment service.

The results therefore cannot be generalised to those with more severe substance use problems or more pressing needs such as recent release from prison or pregnant drug users.

The study also set a number of exclusion criteria which may also limit the generalisability of the results. These criteria included the exclusion of intoxicated people, those who had inadequate language and comprehension, and those with learning disabilities and neurological problems. These factors were assessed by clinicians at the first clinical assessment at the service, so it not known how many were excluded from the study. While it was considered that these factors may have affected the comprehension of the research interview, it may also have produced a sample of heroin users with less severe substance use and other problems which may not adequately represent heroin users presenting to treatment.

It must also be noted that the data was collected from two convenience samples accessing treatment at the same out-patient service within South London. The sample may therefore not generalise well to populations at other services or in other geographical locations to those reported in the current research programme. For example, the service may have certain features that are not shared by other services, such as the assessment procedures conducted (e.g. Brief Assessment, Full Assessment, Dose Assessment) which may have had an impact on treatment entry rates or the motivation of the heroin users involved in the study.

### 5.5.2 Response rates

One of the challenges facing researchers conducting longitudinal outcome studies is successfully locating participants for follow-up assessments (Twitchell et al, 1992). This is particularly true when conducting investigations with substance abuse populations, as the chaotic and sometimes transient lifestyle of these individuals can impede the researcher's ability to maintain contact over extended periods of time. The large number of participants who failed to enter treatment and could not be successfully re-interviewed in Study 2, particularly within the Standard group, led to insufficient statistical power to reliably detect differences between the two treatment-entry groups on a number of measures.

Follow-up rates vary greatly by study (Ribisl et al, 1996; Capaldi and Patterson, 1987) and there is much discussion about how much attrition is acceptable without biasing the study. A number of researchers concluded that there is no absolute answer to this since much depends on the topic of research and the design and nature of the survey (Hedeker et al, 1999; Foster and Bickman, 1996). Researchers have examined the nature of the possible bias that attrition might cause in the interpretation of study findings (Brown et al, 1989; Cook and Campbell, 1979). Incomplete data can compromise the validity of the study, as difficult to locate participants may have differed from other participants with regards to their substance use, motivation, or level of functioning at follow-up. A number of investigators have found that participants who were easier to locate had lower substance use at follow-up (Walton et al, 1998; Moos and Bliss, 1978). Brown et al (1989) noted that participants included in waiting list studies are those that are contactable during the follow up period, it may that these patients were doing relatively well and that any harmful effects of not entering treatment may have been greater for those who were not contactable.

### 5.5.3 Waiting times

The purpose of the design of Study 2 was to produce two groups of treatment seekers with distinctively different waiting periods in order to compare the impact of these waiting periods on patient motivation. Unfortunately this objective was not achieved, with a small proportion of the two groups experiencing waiting periods which were not dissimilar to each other. The waiting period of the Accelerated group varied from the intended 14 days, up to a maximum of 21 days. These variations occurred when waiting list participants failed to attend the Full Assessment appointment at the clinic, necessitating rescheduling of the appointment. Fluctuations in staffing levels during the study recruitment period and fluctuations in the number of heroin users requesting treatment during this time also resulted in a small number of the Standard group experiencing very short waiting periods - 3 patients waited less than 30 days to enter treatment. The similar waiting periods in the two treatment-entry groups may have constrained the ability to detect differences between the groups. This problem was resolved by explorative statistical analyses where a number of participants in each group were excluded from some of the analyses. However, it is noted that reducing the sample size in these analyses may also have prevented meaningful differences between the

treatment-entry groups being detected. Unfortunately this is one of the drawbacks to working in a clinical setting where the length of the waiting period is influenced by a number of factors beyond the control of the research team.

### 5.5.4 Factors not assessed within the research programme

Modern conceptualisations view motivation as arising from the interplay between the individual and the service, rather than simply as an intrinsic property of the individual. It is therefore reasonable to expect that other factors, not considered in the research programme, were involved in the process of change. A major limitation of the research programme is that motivation was assessed in isolation from other factors. In Study 1 treatment variables were not collected and therefore not included in the analyses. Changes in readiness observed at the follow-up periods may have been influenced by a number of factors in the treatment environment. It would have been interesting to assess the effect of the therapeutic relationship between patients and clinicians on motivation, or the impact of methadone dose on patient motivation for change as detailed in the Literature Review.

Study 2 failed to take into account the initial contact between the treatment seekers and the treatment service which may have played a vital role in framing the experience of the treatment seeker and may have influenced motivation and subsequent behaviour such as entering treatment. Although the amount of contact with the treatment service among treatment seekers placed on a waiting list is minimal, recent research suggests that many treatment seekers know (explicitly or otherwise) very early on in the treatment process whether or not they are ready to engage with a service (Stanick et al, 2008). Participants in Study 2 had an initial clinical assessment within the drug service prior to being placed on a waiting list, the effect of the intake facilities, the intake interview, the early therapeutic relationships and the patients' appraisal of the service may all have influenced their motivation and their choice to enter treatment after the waiting period.

The effect of the initial clinical contact on patient behaviour has not been extensively studied, although a qualitative study of applications to a substance abuse treatment services (Ford et al, 2007) reported that applicants expressed concern at the burdensome

admissions processes with the overwhelming amount of paperwork required to meet regulatory requirements. They also commented on a lack of privacy and confidentiality in the waiting rooms at the intake facilities.

Just as the quality of the therapeutic relationship established during treatment is a significant predictor of substance abuse outcomes, including treatment engagement and retention withindifferent treatment programmes (Meier et al, 2005; Fiorentine et al, 1999; Simpson et al, 1997b), a patient's first contact with a treatment service may influence the nature of the therapeutic relationship that ensues and also be related to subsequent treatment uptake. Hyams et al (1996), for example, looked at the impact of patient satisfaction on engagement in alcohol treatment after an initial assessment. Patients who reported a positive therapeutic experience with the worker were much more likely to engage in treatment. Patients were more likely to engage if they felt "liked" by the worker and if they felt the worker "understood" how they felt. Patients were less likely to engage if they felt "criticised" or if they felt the therapist was not genuine and "acting a part". Miller (1985) also found that satisfaction with aspects of the doctor-patient relationship during the initial service visit was related to treatment uptake. Priebe and McCabe (2008) have suggested that there may need to be a minimal threshold in the therapeutic relationship to motivate the patient to engage with a clinician and his or her service. If the relationship is too poor, the patient may not turn up for another appointment and refuse further contact.

The studies also suffered from the fact that a limited range of patient factors were analysed. Individuals with heroin use problems are a diverse population with differing levels of drug-related problems, and varying levels of capabilities and resources to cope with these problems. The regression model predicting treatment entry in Study 2 accounted for only 8.0% of the variance in treatment entry status. Clearly other variables were important in encouraging or preventing treatment entry and also in changing readiness scores over the waiting period. The choice of patient factors was based on those used in previous research, however, the use of these factors failed to generate new findings within the field of research. Inclusion of a greater number of patient factors in examining the relationships of interest is warranted.

### 5.5.5 Reliance on self report data

The study relied entirely on self-reported data. Such data are subject to problems associated with memory recall and social desirability, and thus it was not possible to verify the reliability and validity of the information collected. The drug and alcohol measures used in the research programme were not supported by more objective measures of substance use such as urinalysis, therefore under- or over-reporting of substance use may have occurred. Also, some of the heroin users may not have been truthful in their responses on the SOCRATES due to a strong desire for social approval.

The use of self-report is a limitation common to many research studies conducted with substance use populations and it is assumed that the same under or over-reporting would have occurred at all data collection points, negating any potential problems. To minimise the problems of mis-reporting, patient confidentiality was assured at each structured-interview session. Despite these concerns, studies have generally found self-report of substance use to be reliable over varying recall periods (Darke, 1998; Adelekan et al, 1996).

## 5.6 CLINICAL IMPLICATIONS OF THE RESEARCH FINDINGS

The findings from this study point to several areas of potential improvements in service delivery.

### 5.6.1 The assessment of motivation

The findings demonstrate that heroin users seek and enter treatment with varying levels of readiness to change, and many may not be highly motivated to change their heroin use. Low Recognition and low Taking Steps scores reported at the start of the waiting period in Study 2 suggest that clinicians must not assume that individuals who express interest in treatment are highly motivated to change their substance use behaviours (Battjes et al, 1999). Low motivation may not always be obvious to clinicians and many heroin users may be unable to adequately articulate their attitudes and intentions for changing drug use.

The research programme also demonstrated that readiness to change is a dynamic process that varies over time. Reductions in readiness were observed over relatively short waiting periods among the Accelerated group within the waiting list sample and among heroin users engaged in treatment. These findings highlight the importance of assessing motivation at different stages of the waiting period and during the treatment process. Recognising that differences in readiness and motivation exist among treatment seekers, and that motivation changes over time, and in response to different situations, is of practical importance for treatment services to ensure that support is provided to those who most need it.

### 5.6.2 Motivational interventions

The research literature indicates that motivation can be developed or discouraged by the treatment agency (Miller et al, 2002; Fiorentine et al, 1999). The findings that readiness to change can deteriorate over a two-week waiting period, and that heroin users with higher Recognition and lower Ambivalence scores were more likely to enter treatment, suggests a need to implement techniques and interventions to address patients' motivational needs at different points during the waiting period and also during the treatment process. As noted by Brown and Miller (1993), "the central task of drug treatment should be to heighten the motivation of patients, with particular attention on individuals who are ambivalent or even negative about being there".

A motivational intervention is clinical strategy designed to enhance motivation to change. Motivational interventions employed prior to treatment are designed to assist in modifying substance users' attitudes towards treatment and can help develop behaviours that are predictive of treatment engagement. Although several motivational interventions have been developed, none have received greater empirical support than Motivational Interviewing (Miller and Rollnick, 2002). Motivational Interviewing is a therapeutic style intended to help clinicians work with patients to address their ambivalence, to modify unrealistic treatment expectations and enhance patients self-efficacy prior to, or during treatment. Principles utilised in motivational interviewing include empathy towards the patient, supporting self-efficacy, avoiding arguments and highlighting the disadvantages of continuing their behaviour and advantages of changing their behaviour. Motivational Interviewing was originally developed for

problem alcohol drinkers in the early stages (precontemplation and contemplation) of readiness for change.

Motivational interviewing has been associated with a variety of successful outcomes, including the facilitation of referrals to treatment, reduction or termination of substance use, and increased participation in and compliance with specialised treatments. These outcomes been reported among severely substance-dependent populations (Saunders et al, 1995), dual diagnosis patients (Swanson et al, 1999), polydrug-abusing adolescents, and heroin and marijuana users (Stephens et al, 2000; Bien et al, 1993; Brown and Miller, 1993). A review of eleven clinical trials of Motivational Interviewing concluded that this method is a "useful clinical intervention...and appears to be an effective, efficient, and adaptive therapeutic style worthy of further development, application, and research" (Noonan and Moyers, 1997). Other studies have shown brief interventions using Motivational Interviewing to be more effective than no treatment, or being placed on a waiting list, and promote similar outcomes as some more extensive types of care (Noonan and Moyers, 1997; Bien et al, 1993).

The NTA has recognised the importance of interventions to enhance motivation during the waiting period (NTA, Making the system work - Summary guidance on managing and reducing waiting times for specialist drug treatment services in England, 2002) in order to prepare drug users for structured treatment, with suggestions of developing an additional structured treatment modality if the effectiveness of motivational interventions in relation to treatment outcomes can be demonstrated. Additional research on motivational interventions is needed to establish which elements of the interventions are most useful for promoting motivation. The effectiveness and cost-effectiveness of motivational interventions in relation to other established and more extensive substance abuse treatments should also be examined.

### 5.6.3 Maintaining contact during the waiting period

The finding that twenty per cent of the waiting list sample did not initiate treatment when a place became available may suggest that greater efforts by the treatment service to promote treatment entry are required. Although this study did not collect data about the contacts between the service and the waiting list participants during the waiting

period, information provided by clinical staff suggests that no contact usually occurs until a treatment place becomes available. Interviews in Donmall et al's (2005) study of treatment waiting times found drug users were critical about the lack of contact during the waiting period, with some reporting that they would have appreciated a day- or drop-in service while waiting. Brown et al (1989) suggested that a lack of contact results in a loss of confidence in the service's ability to cater for substance users' needs.

Initiatives which permit services to maintain contact with treatment-seekers during the waiting period would serve several purposes. These may include updating the patients on their waiting list status, to provide interim support to enable patients to reduce heroin use-related risks while awaiting treatment, to enhance motivation as a precursor to entering treatment, to ensure the retention of individuals on the waiting list, to ascertain if the patients still require treatment or have sought help elsewhere, and to prepare patients for the induction phase of treatment. This contact would allow services to be seen as a useful resource for the patient. Although such approaches may not always be feasible due to the extra resources required to deliver this type of patient management, the adoption of some of the techniques may prove beneficial in improving attendance. The NTA (2002) recommended interim contacts during the waiting period such as providing patients with estimations of treatment entry dates and then contacting them prior to the appointment to arrange a mutually convenient slot. Whether such strategies have been adopted by services is unknown.

It has been suggested that commencing induction procedures soon after the first contact between the patient and the service, prior to treatment entry, may allow services to be seen as a meaningful resource to the patient. This could take the form of role inductions which would function to clarifying roles, allay concerns, correct misconceptions and provide the patient with a better understanding of the treatment process. Such efforts appear to be particularly appropriate for substance users who have no previous treatment experience and who will often express numerous fears such as failing in treatment (Cunningham et al, 1993; Oppenheimer et al, 1988; Sheehan et al, 1986).

Although role inductions have not been extensively evaluated, Zweben and Li (1981) reported that patients who participated in a single group session of role induction prior

to treatment in an outpatient substance abuse clinic were more likely to remain for the initial four sessions of treatment than were those who did not receive role inductions. When a treatment place becomes available more assertive efforts should be extended to contact and engage patients in treatment. Some heroin users may have obstacles such as psychiatric instability or homelessness which may need to be treated more flexibly than is typically the case to encourage patients to attend treatment. Reminder telephone calls or letters before the first scheduled session have been shown to improve attendance rates across several mental health sectors, including alcohol treatments (Donohue, et al, 1998), particularly when appointments are scheduled soon after referral (Gariti et al, 1995). Contacts adopting a more personal approach have demonstrated superior results than less personal methods (Stark, 1992; Nirenburg et al, 1980).

### 5.6.4 Addressing patient expectations

Treatment services may need to address the expectations that drug users bring with them to the health care encounter. Interviews with heroin users at the start of the waiting period in Study 2 indicated that over half of the sample expected to wait less than four weeks to enter treatment. The mean waiting time for the Standard treatment-entry group was eight weeks, with a number waiting up to sixteen weeks to be offered a treatment place. The discrepancy between expected and actual waiting times observed in Study 2 suggests that treatment services need to review their communication strategies and provide clearer information regarding the length of the waiting list in order to promote realistic expectations of treatment entry and to fully engage with patients early in the treatment process. During the initial contact between the treatment seeker and treatment service, clinicians should explore patient's expectations about the length of the waiting period and educate them about treatment. This may help to bring the expectations of the substance user in line with the realities of treatment and reduces the probability of treatment not living up to their expectations. Previous research has demonstrated that treatment retention is positively related to clients' expectations of treatment (Zweben and Li, 1981).

### 5.6.5 Reduction of waiting times

The difficulties of engaging drug users effectively in treatment, regardless of their level of motivation, is compounded when services are limited or rationed by the use of waiting lists. Although the statistical analyses failed to show a relationship between waiting times and treatment entry, the waiting period was still a period of attrition for approximately twenty per cent of the sample who requested treatment. The waiting period was also characterised by a reduction in motivation on a number of dimensions on the SOCRATES, regardless of the duration of the wait. These findings suggests that even a two-week waiting period was a sufficient length to rouse second thoughts in a number of heroin users about changing their drug use or for wanting treatment, or for other events to occur which prevented them from entering treatment.

Although many heroin users reported reducing, or maintaining, the frequency of their heroin use over the waiting period, and a small number reported a deterioration in their heroin use, the waiting period still represents a period of risk, and the costs of continued drug abuse to society must not be underestimated. The consequences of untreated drug abuse includes homelessness (Adamson and Sellman, 1998) health risks including needle sharing, overdose (Chen and Lin, 2009) and disease transmission (Wenger and Rosenbaum, 1994), along with the long-term problems associated with heroin use such as liver damage, cardiovascular disease and clogging of the blood vessels (Hoffman et al, 2008; Buckland et al, 2008). Untreated drug use also poses extensive costs to health and social services and to the law enforcement agencies (Zealberg and Brady, 1999; Bushnell and Bakker, 1997). The impact of crimes committed by drug users to individuals, families and communities (Gordon et al, 2006) is also a significant concern. Such findings suggest that a reduction or elimination of waiting times would be an important step in reducing the harms associated with untreated drug abuse for both the individual and society.

Since the inception of this research programme there has been increased attention to the issues of waiting times in drug abuse treatment settings by the Department of Health and the NTA. The Updated Drug Strategy of 2002 set the target to double the number of people in treatment by 2008 and called for "maximum waiting times from referral to receipt of treatment should be no more than two weeks for in-patient detoxification and

G.P. prescribing and three weeks for all other forms of treatment" by 2004 (Home Office, 2002). There was a trebling of Government investment in specialist drug treatment from £142m in 2001/2 to £385m in 2006/7. Increases in funding have expanded the workforce with an extra 4000 drug treatment workers in post nationally in September 2005 compared to March 2002. This in turn reduced waiting times and consequently increased the number of problematic drug users accessing services.

> "Access to, and the capacity of, substance misuse services has improved dramatically in recent years. Around 160,000 people joined treatment programmes in 2004/2005 compared with 85,000 in 1998/1999, a rise of 89 per cent. Government investment has triggered a significant expansion in services that has cut waiting times down from an average of 9.1 weeks in December 2001 to 2.4 weeks in September 2005" (Healthcare Commission, 2006).

While reductions in waiting times and increases in the capacity of services can only be viewed as a positive step, these measures of success need to be contextualised with information relating to treatment retention and the outcomes of individuals leaving treatment services. National figures suggest that many drug users drop out of treatment long before treatment is complete, with 34% dropping out before significant benefits can be realised (NTA, 2005). Additional attention to treatment attrition is therefore warranted.

### 5.6.6 Interim drug clinics

If a reduction in waiting times is not possible, then the implementation of interim methadone prescribing until a formal treatment place becomes available would address the immediate needs of the treatment seekers. Such prescribing would serve to reduce the harms associated with procuring and taking heroin and prepare heroin users for formal treatment which may have the potential to reduce attrition over the waiting period. Interim methadone maintenance has been tested as a rapid-intake alternative for heroin addicts waiting for treatment. Such interim clinics provide limited services to heroin users including supervised daily dosing with methadone, physical examinations and education, but do not provide counselling or social services support which are usually incorporated into comprehensive treatments. Such clinics were trialled in New

York in an attempt to halt the spread of HIV. Schwartz et al (2006) compared interim maintenance treatment to a waiting list condition at an opioid treatment programme and found sustained benefits of interim treatment ten months after enrolment in terms of increased treatment entry and reduced heroin use and criminal behaviour compared to patients on a waiting list with no interim contacts. Seventy-six percent of study participants receiving interim methadone entered comprehensive treatment within four months, compared with only 21 percent of the control group.

Despite the success of interim services they have been prohibited in the US even as a preliminary to full-service programmes as federal regulations requires counselling and other supports for opiate users provided with methadone. In the UK, general practitioners, in certain areas, provide interim prescribing prior to formal treatment (Donmall et al, 2005), although there is a lack of information about the prevalence of such practice or the effectiveness of this prescribing in terms of promoting entry into formal treatment programmes.

## 5.7 RESEARCH RECOMMENDATIONS

Based on the results of this research, a number of areas for future research can be identified.

### 5.7.1 Additional research on waiting list samples

Additional research on the effects of waiting list participation is warranted. Specifically, there is a lack of qualitative studies that focus exclusively on the experience of waiting for treatment or the effects of the waiting period on treatment entry or on the motivation of substance users during this period. Information from such research could contribute in various ways to the field of drug abuse such as assisting clinicians to predict who is more likely to enter treatment after the waiting period and direct additional support such as motivational enhancements to those who are less likely to enter treatment.

### 5.7.2 Additional research on the SOCRATES

Although the SOCRATES has been used in treatment populations and out-of-treatment substance users, it has only been used to assess the readiness to change in one previous study of waiting list participants (Burrow-Sanchez and Lundberg, 2007). Additional research is required to determine whether this measure, or other measures of motivation, is appropriate for use with waiting list participants. There may also be a need to develop specific items or measures to use specifically with waiting list samples. For example, as noted earlier, the statements on the Taking Steps scale of the SOCRATES fail to recognise that seeking treatment is an action designed to change drug use. The content of the SOCRATES reflect the behaviours which the authors of the SOCRATES believed were important in the process of change among alcohol users at the point of treatment entry and thus included in the measure. Different statements may be required to reflect the intentions, attitudes and behaviours of treatment seekers awaiting treatment entry.

### 5.7.3 Attrition

More research needs to be conducted to address the pre-intake drop-out problem. Since participation in treatment has been associated with a range of positive outcomes in terms of reduction in substance use and offending, research into interventions that encourage initiation after the waiting period should be paramount. A number of studies support the idea that pre-treatment interventions may be effective in facilitating treatment entry for substance users (Marlatt et al, 1997), although more research is needed to evaluate which strategies, or combinations of strategies, are most effective. Further research would be useful to identify the most appropriate stage at which service enhancements are most likely to increase the likelihood of entering treatment. Service providers could audit non-attendance patterns to identify indicators of non-attendance among the population which they serve.

Further study on research attrition is also needed. The current study demonstrated that tracking drug users in longitudinal research is challenging and obtaining high follow-up rates is a difficult and resource-intensive task. Research attrition is a concern among researchers as it may lead to systematic bias in the results obtained and impair the

ability of the study findings to provide accurate generalisations to the larger population. The findings recommend that additional time and resources are permitted for tracking activities in longitudinal research and also that additional research on methods to locate difficult-to-contact study participants is undertaken. While the current study used next-of-kin details to seek participants who could not be contacted through conventional methods, these contacts conferred no additional benefit in locating the study participants. Future longitudinal research should consider the use of other contacts such as G.P.s or sites where unemployed substance users collect their benefits, with the prior consent of the participant, to gain contact with study participants. Identification of baseline characteristics associated with attrition and difficult-to-locate participants would also allow the targeting of study resources towards those participants who are most likely to elude contact (Hansten et al, 2000).

## 5.8 CONCLUDING COMMENTS

The purpose of this research programme was to determine the extent and nature of the relationship between waiting times to enter drug abuse treatment and motivation to change heroin use. The effect of treatment waiting times on substance users' motivation to change their substance use is a largely undocumented area and no previous studies, known to the author, has tracked the motivation of waiting list participants over the course of the waiting period, or have related the changes in motivation to treatment events or patient behaviours. Although the research programme failed to show that readiness to change mediates the relationship between treatment waiting times and outcomes during this period, a number of relationships between the variables were found providing useful and relevant information about the motivation of waiting list participants and more importantly to the changes in motivation during this period.

The research programme found varying patterns of change in readiness over the course of the waiting period and during a six-month treatment period, demonstrating that people respond differently to the delay for treatment and to treatment participation. Although this research programme had the advantage of longitudinal outcomes and examined a number of relationships which have not previously been addressed within the substance abuse research literature, problems with sample sizes, the design of Study 2 and the exclusion of important factors in the treatment environment, may have limited

the scope of the research programme to adequately examine some of the variables of interest. More detailed and comprehensive studies of the motivation of waiting list participants and the relationship of motivation and waiting times are recommended. Such research may be important for promoting a greater understanding of the treatment entry process and the ways in which treatment systems can increase their responsiveness to substance abusers.

The longitudinal use of the SOCRATES in detecting changes in readiness over time adds to the small body of research which has directly examined the use of the Transtheoretical Model in assessing changes in readiness over time, rather than inferring readiness or motivation from changes in behaviour. The research programme has shown that intentions and behaviours reported on the SOCRATES do not always translate into observable behaviours. It is therefore recommended that future research examines motivation and outcomes separately and does not assume that the two are always related.

Motivation is still an elusive concept and it is likely that a complex interaction of factors is associated with a heroin user's decision to change heroin use behaviours and participate in treatment. While readiness to change may represent an important component of the change process, researchers have stated that it should be conceptualised as a multi-dimensional construct with multiple determinants. A better understanding of some of the determinants of change, including treatment waiting times, can help to identify key influences that enhance motivation. Such an understanding may lead to the development of effective strategies to encourage drug users who make contact with treatment services to return and stay for a sufficiently beneficial period to make positive changes to their drug use.

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# Treatment Outcome Study

# Intake Interview

# Community Drug /Alcohol Team

Addiction Resource Centre. 63-65 Denmark Hill, London SE5 8RS
0207 740575

Information Sheet

We are recruiting alcohol and drug users to a research project being conducted at Marina House. The project is trying to find out about your substance use, your health and your spending habits during your time in treatment.

If you choose to take part in the study we would like you to complete a questionnaire (with the help of a researcher) today and another questionnaire in three months time and one in six months time. Each questionnaire will take about 40 minutes to complete. Each questionnaire will be completed at the treatment service or at a venue that is convenient to you. If you drop out of treatment we would also like to conduct a questionnaire with you for the project.

Choosing to take part in the project is entirely up to you and you are free to stop completing the questionnaires any time during the project.

Any information you provide will be kept in the strictest confidence and will not be passed on to any members of staff.

# TREATMENT OUTCOME STUDY : Intake Interview

**SECTION A: DEMOGRAPHICS**

1.Community Alcohol Team ☐ Community Drug Team ☐

2.Respondent code ☐ 3.Keyworker ☐

4.Gender ☐ 5. Ethnicity (code) ☐

6.Age ☐ 7.Date ☐

8.Which treatment service are you attending?

| | CDT | CAT | MMC |
|---|---|---|---|
| Date of admission/start of treatment | | | |
| Number of times attending per week | | | |

9. How many nights have you spent in each of the following places in the last 30 days?

Own or relative's home ☐ Prison/Detention ☐

On the street ☐ Hotel/ Temp. Accommodation ☐

Friends/other people's home ☐ Hospital/Treatment Centre ☐

10. In the last 30 days have you been mainly in

Full-time work ☐

Part-time work ☐ Unemployed ☐

In Education ☐ Sickness Benefit ☐

**Section B: Physical and Psychological Health**

Physical health in the last month

11. How often in the last month have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Poor appetite | | | | | |
| Tiredness / fatigue | | | | | |
| Nausea | | | | | |
| Stomach pains | | | | | |
| Difficulty breathing | | | | | |
| Chest pains | | | | | |
| Joint / bone pain | | | | | |
| Muscle pain | | | | | |
| Numbness/tingling | | | | | |
| Tremors (shakes) | | | | | |

Psychological health in the last month

12. How often in the last month have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Feeling tense or keyed up | | | | | |
| Suddenly scared for no reason | | | | | |
| Feeling fearful/afraid | | | | | |
| Nervousness or shakiness inside | | | | | |
| Spells of panic or terror | | | | | |
| Feeling hopeless about the future | | | | | |
| Feelings of worthlessness | | | | | |
| Feeling no interest in things | | | | | |
| Feeling lonely | | | | | |
| Thoughts of ending your life | | | | | |

**SECTION C: DRUG & ALCOHOL USE**

13. In the last 30 days, can you tell me how often you have used the following substances, the amount and the main route of use

| Substance | Number of days used | Average amount per day | Main route of ingestion | Age first used | Age of first treatment |
|---|---|---|---|---|---|
| Heroin | | g | | | |
| Methadone | | ml | | | |
| Other opiates | | mg | | | |
| Benzodiazepines | | mg | | | |
| Crack cocaine | | g | | | |
| Cocaine powder | | g | | | |
| Amphetamines | | g | | | |
| Cigarettes | | | | | |
| Cannabis | | oz/joints | | | |
| Alcohol | | units | | | |

14. Can you tell me which drugs/alcohol you have taken over the last 3 days

| | Drug/Alcohol | Amount (weight/£) | Prescribed/non-prescribed | Route |
|---|---|---|---|---|
| Day 1 (today) | | | | |
| Day 2 (yesterday) | | | | |
| Day 3 (day before) | | | | |

15. CAGE drinking questionnaire

| | Yes | No |
|---|---|---|
| Have you ever felt you ought to cut down on your drinking? | | |
| Have people annoyed you by criticising your drinking? | | |
| Have you ever felt bad or guilty about your drinking? | | |
| Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover? | | |

16. Over the last year, did you ever think that your heroin/alcohol use was out of control

| Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|
| | | | |

17. Over the last year did the prospect of not taking heroin/alcohol make you very anxious or worried?

| Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|
| | | | |

18. Did you worry about your heroin/alcohol use over the last year?

| Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|
| | | | |

19. Did you wish you could stop taking heroin/alcohol over the last year?

| Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|
| | | | |

20. How difficult would you find it to stop, or go without heroin/alcohol ?

| Easy | Fairly Difficult | Very Difficult | Impossible |
|---|---|---|---|
| | | | |

**Section D: Injecting and Risk Behaviour**

If you have not injected drugs in the last 30 days please skip to Q26

21. When did you last inject ? _____ days

22. In which part of the body do you usually inject? _____

23. How many times in the last 30 days have you used a need after someone else?

Never ☐ 3-5 times ☐

Once ☐ 6-10 times ☐

Twice ☐ more than 10 times ☐

24. In the last 30 days how often have you injected alone?

| Never | Rarely | Sometimes | often | Always |
|---|---|---|---|---|
| | | | | |

25. When injecting how often do you drink alcohol?

| Never | Rarely | Sometimes | often | Always |
|---|---|---|---|---|
| | | | | |

26. In the last 30 days how many overdoses have you had? ☐

27. In the last 30 days how many overdoses have you witnessed? ☐

28. In the last 30 days how many fatal overdoses have you witnessed? ☐

**SECTION E: PERSONAL ALCOHOL/DRUG USE QUESTIONNAIRE (SOCRATES)**

| Main Substance: Heroin/Alcohol | Stron. Disag | Disag. | Undecided or Unsure | Agree | Stron. Agree |
|---|---|---|---|---|---|
| 29. I really want to make changes in my drug/alcohol use | | | | | |
| 30. Sometimes I wonder if I am an addict/alcoholic | | | | | |
| 31. If I don't change my drug/alcohol use soon, my problems are going to get worse | | | | | |
| 32. I have already started making some changes in my drug/alcohol use | | | | | |
| 33. I was using too much at one time, but I've managed to change my drug/alcohol use | | | | | |
| 34. Sometimes I wonder if my drug/alcohol use is hurting other people | | | | | |
| 35. I have a drug/alcohol problem | | | | | |
| 36. I'm not just thinking about changing my drug/alcohol use, I'm already doing something about it | | | | | |
| 37. I have already changed my drug/alcohol use, and I am looking for ways to keep from slipping back to my old pattern | | | | | |
| 38. I have a serious problem with drugs/alcohol | | | | | |
| 39. Sometimes I wonder if I am in control of my drug/alcohol use | | | | | |
| 40. My drug/alcohol use is causing a lot of harm | | | | | |
| 41. I am actively doing things now to cut down or stop drug/alcohol use | | | | | |
| 42. I want help to keep from going back to the drug/alcohol/alcohol use problems that I had before | | | | | |
| 43. I know that I have a drug/alcohol use problem | | | | | |
| 44. There are times when I wonder if I take drugs/alcohol too much | | | | | |
| 45. I am an drug addict/alcoholic | | | | | |
| 46.I am working hard to change my drug/alcohol use | | | | | |
| 47.I have made some changes in my drug/alcohol use, and I want some help to keep me from going back to the way I used to use | | | | | |

**SECTION F: SOCIAL FUNCTIONING**

48. How many members of your family have you seen in the last 30 days? ☐

49. How many immediate family members do you have? ☐

50. How many members of your family have drug problems?

| none | one | a few | most | all |
|---|---|---|---|---|
| | | | | |

51. How many members of your family have alcohol problems?

| none | one | a few | most | all |
|---|---|---|---|---|
| | | | | |

52. If you are currently in a relationship, how often in the last 30 days has your partner

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Complained about your drinking/drug use? | | | | | |
| Tried to stop you from having a drink/drugs? | | | | | |
| Refused to talk to you because you have been drinking/using? | | | | | |
| Threatened to leave you because of your drinking/using? | | | | | |
| Had to put you to bed after you had been drinking/using? | | | | | |
| Refused to have sex with you because of drinking/using? | | | | | |
| Have you shouted at him/her when you have been drinking/using? | | | | | |
| Have you injured him/her after you have been drinking/using? | | | | | |
| Have you been legally separated from your spouse? | | | | | |

53. If you have children who you are regularly in contact with how often in the last 30 days have they

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Criticised your drinking/using | | | | | |
| Tried to stop you from having a drink/drugs | | | | | |
| Have you had rows with your children about drinking/using | | | | | |
| Do your children tend to avoid you when you have been drinking/using | | | | | |

54. If you have been employed in last 30 days how often have you

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Found your work less interesting than you used to? | | | | | |
| Been unable to arrive on time for work due to your drinking/using? | | | | | |
| Missed a whole day after a drinking/using session? | | | | | |
| Been less able to do your job because of your drinking/using? | | | | | |
| Had any formal warnings from your employers? | | | | | |
| Been suspended or dismissed from work? | | | | | |
| Had any accidents at work after drinking/using? | | | | | |
| Has anyone at work complained about you being late or absent? | | | | | |

**SECTION G. TREATMENT PERCEPTIONS**

55. Please indicate whether you agree or disagree with the following statements

| I came into treatment/ I chose to start treatment... | Stron. Disag. | Disagree | Undecided | Agree | Stron. agree |
|---|---|---|---|---|---|
| to please my family | | | | | |
| to please my children | | | | | |
| to please my partner | | | | | |
| through my own choice | | | | | |
| because of legal problems | | | | | |
| because of health concerns(specify) | | | | | |
| because of work reasons | | | | | |
| because I was fed up of using | | | | | |
| other reasons (specify) | | | | | |

**SECTION H. INVOLVEMENT WITH OTHER SERVICES/SUPPORT SYSTEMS**

56. In the last 30 days have you accessed any other treatment services? ☐ yes ☐ no

57. Which services have you attended and how useful did you find them?

| | | | | | How useful/helpful did you find them? | | |
|---|---|---|---|---|---|---|---|
| | Where? | Start date? | Date last attended/or still attending? | How often do you attend? | Useful | Not sure | Not useful |
| Day programme | | | | | | | |
| Street agencies | | | | | | | |
| Drop-in services | | | | | | | |
| GP | | | | | | | |
| In-patient detox | | | | | | | |
| Residential rehab | | | | | | | |
| Counselling service | | | | | | | |
| Other | | | | | | | |

**SECTION I: SOURCES OF INCOME**

58. Are you currently in any form of employment? Yes ☐ No ☐

59. What kind of work do you do, how many hours per week do you work and what is your salary?

| | Type of work | Hours | Salary |
|---|---|---|---|
| Full-time | | | |
| Part-time | | | |
| Casual | | | |

60. Which benefits are you claiming, how long have you been claiming them, how often do you get paid and how much money do you receive per week?

| | Claiming | Length of time claiming | How often paid | Amount |
|---|---|---|---|---|
| Job seekers allowance | | | | |
| Income support | | | | |
| Housing benefit | | | | |
| Incapacity/sickness benefit | | | | |
| Child benefit | | | | |
| Disability allowance | | | | |
| Other(specify) | | | | |

61. Do you use any of the following methods to raise money (in the last 30 days)?

| | use | No. of times in the last 30 days | Amount earned per week |
|---|---|---|---|
| Selling the big issue | | | |
| Begging | | | |
| Gambling | | | |
| Pawning own belongings | | | |
| Pawning someone else's belongings | | | |
| Prostitution | | | |

| | How much in the last 30 days |
|---|---|
| Money from siblings/family/friends | |
| Covenants | |
| Interest from savings | |
| Family inheritance | |

**SECTION J. SPENDING**

62. Do you pay rent/mortgage where you live? ☐ Yes ☐ No if No skip to Q.66

63. Over the last 30 days have you kept up to date with you rent/mortgage ?

Yes ☐ No ☐

64. If No, how much do you owe? ☐

65. How much do they cost per week?

| | Amount per week? | Amount paid by benefits? |
|---|---|---|
| Rent | | |
| Mortgage | | |

Household bills:

66. In the last 30 days have you paid any household bills? Yes ☐ No ☐

| | If no, amount owed | If yes, amount spent per week |
|---|---|---|
| Electricity | | |
| Gas | | |
| Water rates | | |
| Council tax | | |
| T.V. License | | |
| Telephone | | |
| Bank loans/money lenders | | |
| Rental costs ( TV) | | |

67. How many times per week do you go food shopping and how much do you spend on food (in the last 30 days)?

| | Number of times per week | Amount spent per week |
|---|---|---|
| Supermarket | | |
| Market | | |
| Take-away | | |
| Restaurants | | |
| Local shop/garage | | |

68. Do you spend money on any of the following (in the last 30 days)?

| | Number of times per week | Amount spent per week |
|---|---|---|
| Public transport | | |
| Petrol | | |
| Laundrette | | |
| Crèche/nursery | | |
| Other (specify) | | |

# TREATMENT OUTCOME STUDY : 3/6 month interview

Time of interview : 3 month ☐ 6 month ☐

| | 3 month | 6 month |
|---|---|---|
| In treatment | | |
| Out of treatment | | |

**SECTION A:**

1.Community Alcohol Team ☐ Community Drug Team ☐

2.Respondent code ☐ 3.Keyworker ☐

4.Date ☐

5.Which treatment service are you attending?

| | CDT | CAT | MMC |
|---|---|---|---|
| Number of times attending per week | | | |

6. If no longer in Maudsley treatment services.....

Since the previous interview have you attended any inpatient or out-patient services at the Royal Bethlem and Maudsley Trust?

| | Out-patient services | | | In-patient services | | |
|---|---|---|---|---|---|---|
| | CDT | CAT | MMC | AAU | Alex House | Wickham Park |
| On how many occasions? | | | | | | |
| When did you last attend? | | | | | | |
| Did you complete the programme? | | | | | | |
| Date of discharge? | | | | | | |
| Self/disciplinary/medical? | | | | | | |
| For how long were you abstinent after you left? | | | | | | |

7. How many nights have you spent in each of the following places in the previous 30 days ?

| | | | |
|---|---|---|---|
| Own or relative's home | | Prison/Detention | |
| On the street | | Hotel/ Temp. Accommodation | |
| Friends/other people's home | | Hospital/Treatment Centre | |

8. In the previous 30 days have you been mainly in

| | | | |
|---|---|---|---|
| Full-time work | | Part-time work | |
| Unemployed | | | |
| In Education | | Sickness Benefit | |

**Section B: Physical and Psychological Health**

Physical health in the last month

9. How often in the last 30 days have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Poor appetite | | | | | |
| Tiredness / fatigue | | | | | |
| Nausea | | | | | |
| Stomach pains | | | | | |
| Difficulty breathing | | | | | |
| Chest pains | | | | | |
| Joint / bone pain | | | | | |
| Muscle pain | | | | | |
| Numbness/tingling | | | | | |
| Tremors (shakes) | | | | | |

Psychological health in the last month

10. How often in the last 30 days have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Feeling tense or keyed up | | | | | |
| Suddenly scared for no reason | | | | | |
| Feeling fearful/afraid | | | | | |
| Nervousness or shakiness inside | | | | | |
| Spells of panic or terror | | | | | |
| Feeling hopeless about the future | | | | | |
| Feelings of worthlessness | | | | | |
| Feeling no interest in things | | | | | |
| Feeling lonely | | | | | |
| Thoughts of ending your life | | | | | |

**SECTION C: DRUG & ALCOHOL USE**

11. In the last 30 days, can you tell me how often you have used the following substances, the amount and the main route of use

| Substance | Number of days used | Average amount per day | Main route of ingestion | Age first used | Age of first treatment |
|---|---|---|---|---|---|
| Heroin | | g | | | |
| Methadone | | ml | | | |
| Other opiates | | mg | | | |
| Benzodiazepines | | mg | | | |
| Crack cocaine | | g | | | |
| Cocaine powder | | g | | | |
| Amphetamines | | g | | | |
| Cigarettes | | | | | |
| Cannabis | | oz/joints | | | |
| Alcohol | | units | | | |

12. Can you tell me which drugs/alcohol you have taken over the last 3 days

| | Drug/Alcohol | Amount (weight/£) | Prescribed/non-prescribed | Route |
|---|---|---|---|---|
| Day 1 (today) | | | | |
| Day 2 (yesterday) | | | | |
| Day 3 (day before) | | | | |

13. CAGE drinking questionnaire: In the last 30 days

| | Yes | No |
|---|---|---|
| Have you ever felt you ought to cut down on your drinking? | | |
| Have people annoyed you by criticising your drinking? | | |
| Have you ever felt bad or guilty about your drinking? | | |
| Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover? | | |

**Section D: Injecting and Risk Behaviour**

If you have not injected drugs in the last 30 days please skip to Q18

14. When did you last inject ? _____ days ago

15. In which part of the body do you usually inject? _____

16. How many times in the last 30 days have you used a need after someone else?

Never ☐ 3-5 times ☐

Once ☐ 6-10 times ☐

Twice ☐ more than 10 times ☐

17. In the last 30 days how often have you injected alone?

| Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|
| | | | | |

18. In the last 30 days how many overdoses have you had? ☐
19. In the last 30 days how many overdoses have you witnessed? ☐
20. In the last 30 days how many fatal overdoses have you witnessed? ☐

**SECTION E: PERSONAL ALCOHOL/DRUG USE QUESTIONNAIRE (SOCRATES)**

| Main Substance: Heroin/Alcohol | Stron. Disag | Disag. | Undecided or Unsure | Agree | Stron. Agree |
|---|---|---|---|---|---|
| 21. I really want to make changes in my drug/alcohol use | | | | | |
| 22. Sometimes I wonder if I am an addict/alcoholic | | | | | |
| 23. If I don't change my drug/alcohol use soon, my problems are going to get worse | | | | | |
| 24. I have already started making some changes in my drug/alcohol use | | | | | |
| 25. I was using too much at one time, but I've managed to change my drug/alcohol use | | | | | |
| 26. Sometimes I wonder if my drug/alcohol use is hurting other people | | | | | |
| 27. I have a drug/alcohol problem | | | | | |
| 28. I'm not just thinking about changing my drug/alcohol use, I'm already doing something about it | | | | | |
| 29. I have already changed my drug/alcohol use, and I am looking for ways to keep from slipping back to my old pattern | | | | | |
| 30. I have a serious problem with drugs/alcohol | | | | | |
| 31. Sometimes I wonder if I am in control of my drug/alcohol use | | | | | |
| 32. My drug/alcohol use is causing a lot of harm | | | | | |
| 33. I am actively doing things now to cut down or stop drug/alcohol use | | | | | |
| 34. I want help to keep from going back to the drug/alcohol/alcohol use problems that I had before | | | | | |
| 35. I know that I have a drug/alcohol use problem | | | | | |
| 36. There are times when I wonder if I take drugs/alcohol too much | | | | | |
| 37. I am an drug addict/alcoholic | | | | | |
| 38.I am working hard to change my drug/alcohol use | | | | | |
| 39.I have made some changes in my drug/alcohol use, and I want some help to keep me from going back to the way I used to use | | | | | |

**SECTION F: SOCIAL FUNCTIONING**

40. How many members of your family have you seen in the last 30 days? ☐

41. If you are currently in a relationship, how often in the last 30 days has your partner

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Complained about your drinking/drug use? | | | | | |
| Tried to stop you from having a drink/drugs? | | | | | |
| Refused to talk to you because you have been drinking/using? | | | | | |
| Threatened to leave you because of your drinking/using? | | | | | |
| Had to put you to bed after you had been drinking/using? | | | | | |
| Refused to have sex with you because of drinking/using? | | | | | |
| Have you shouted at him/her when you have been drinking/using? | | | | | |
| Have you injured him/her after you have been drinking/using? | | | | | |
| Have you been legally separated from your spouse? | | | | | |

42. If you have children who you are regularly in contact with how often in the last 30 days have they

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Criticised your drinking/using | | | | | |
| Tried to stop you from having a drink/drugs | | | | | |
| Have you had rows with your children about drinking/using | | | | | |
| Do your children tend to avoid you when you have been drinking/using | | | | | |

43. If you have been employed in last 30 days how often have you

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Found your work less interesting than you used to? | | | | | |
| Been unable to arrive on time for work due to your drinking/using? | | | | | |
| Missed a whole day after a drinking/using session? | | | | | |
| Been less able to do your job because of your drinking/using? | | | | | |
| Had any formal warnings from your employers? | | | | | |
| Been suspended or dismissed from work? | | | | | |
| Had any accidents at work after drinking/using? | | | | | |
| Has anyone at work complained about you being late or absent? | | | | | |

**SECTION G. INVOLVEMENT WITH OTHER SERVICES/SUPPORT SYSTEMS**

44. Since the previous research interview have you accessed any other treatment services?

Yes ☐ No ☐ If No, skip to Q 46

45. Which services have you attended and how useful did you find them?

| | | | | | How useful/helpful did you find them? | | |
|---|---|---|---|---|---|---|---|
| | Where? | Start date? | Date last attended/or still attending? | How often do you attend? | Useful | Not sure | Not useful |
| Day programme | | | | | | | |
| Street agencies | | | | | | | |
| Drop-in services | | | | | | | |
| GP | | | | | | | |
| In-patient detox | | | | | | | |
| Residential rehab | | | | | | | |
| Counselling service | | | | | | | |
| Other | | | | | | | |

**SECTION H: REASONS FOR DROPPING OUT OF TREATMENT**

IF YOU ARE STILL ENGAGED IN TREATMENT PLEASE SKIP TO Q.50

46. Can you tell me how much you agree/disagree with the following statement as reasons why you dropped out of treatment at Marina House

| | Stron. Disag. | Disagree | Undecided | Agree | Stron. agree |
|---|---|---|---|---|---|
| I moved out of the catchment area | | | | | |
| I was dissatisfied with my key-worker | | | | | |
| I relapsed | | | | | |
| I entered another treatment service | | | | | |
| I was dissatisfied with the lack of progress | | | | | |
| Withdrawals were too severe | | | | | |
| I was craving alcohol/drugs too much | | | | | |
| I did not feel I was ready for that level of commitment | | | | | |
| The type of treatment was not suitable for my needs | | | | | |
| I sorted out my alcohol/drug problem myself | | | | | |
| Other reason(specify) | | | | | |

47. Do you have any intention of re-entering treatment? Yes ☐ No ☐

48. Do you have any intention of re-entering another treatment service? Yes ☐ No ☐

Please specify _____

49. If Yes, when do you think you will re-enter treatment?

| In the next week | Within the next month | Within the next 6 months | Within the next year | Don't know |
|---|---|---|---|---|
| | | | | |

**SECTION I. TREATMENT PERCEPTIONS**

If you are no longer in treatment please skip to Q.51

50. Please indicate whether you agree or disagree with the following statements

| I remained in/ returned to treatment.... | Stron. Disag. | Disagree | Undecided | Agree | Stron. agree |
|---|---|---|---|---|---|
| to please my family | | | | | |
| to please my children | | | | | |
| to please my partner | | | | | |
| through my own choice | | | | | |
| because of legal problems | | | | | |
| because of health concerns (specify) | | | | | |
| because of work reasons | | | | | |
| because I was fed up of using | | | | | |
| other reasons (specify) | | | | | |

**SECTION J: SOURCES OF INCOME**

51. Are you currently in any form of employment? Yes ☐ No ☐

52. What kind of work do you do, how many hours per week do you work and what is your salary ?

| | Type of work | Hours | Salary |
|---|---|---|---|
| Full-time | | | |
| Part-time | | | |
| Casual | | | |

53. Which benefits are you claiming, how long have you been claiming them, how often do you get paid and how much money do you receive per week?

| | Claiming | Length of time claiming | How often paid | Amount |
|---|---|---|---|---|
| Job seekers allowance | | | | |
| Income support | | | | |
| Housing benefit | | | | |
| Incapacity/sickness benefit | | | | |
| Child benefit | | | | |
| Disability allowance | | | | |
| Other(specify) | | | | |

54. Have you used any of the following methods to raise money in the last 30 days?

| | use | No. of times in the last 30 days | Amount earned per week |
|---|---|---|---|
| Selling the big issue | | | |
| Begging | | | |
| Gambling | | | |
| Pawning own belongings | | | |
| Pawning someone else's belongings | | | |
| Prostitution | | | |

| | How much in the last 30 days |
|---|---|
| Money from siblings/family/friends | |
| Covenants | |
| Interest from savings | |
| Family inheritance | |

**SECTION K: SPENDING**

55. Do you pay rent/mortgage where you live? Yes ☐ No ☐ if No skip to Q.59

56. Over the last 30 days have you kept up to date with you rent/mortgage? Yes ☐ No ☐

57. If No, how much do you owe? ☐

58. How much do they cost per week?

| | Amount per week? | Amount paid by benefits? |
|---|---|---|
| Rent | | |
| Mortgage | | |

Household bills:

59. In the last 30 day have you paid any household bills? Yes ☐ No ☐

| | If no, amount owed | If yes, amount spent per week |
|---|---|---|
| Electricity | | |
| Gas | | |
| Water rates | | |
| Council tax | | |
| T.V. License | | |
| Telephone | | |
| Bank loans/money lenders | | |
| Rental costs ( TV) | | |

60. How many times per week do you go food shopping and how much do you spend on food (in the last 30 days)?

| | Number of times per week | Amount spent per week |
|---|---|---|
| Supermarket | | |
| Market | | |
| Take-away | | |
| Restaurants | | |
| Local shop/garage | | |

61. Do you spend money on any of the following (in the last 30 days)?

| | Number of times per week | Amount spent per week |
|---|---|---|
| Public transport | | |
| Petrol | | |
| Laundrette | | |
| Crèche/nursery | | |
| Other (specify) | | |

**WAITING LIST RESEARCH PROJECT**

Information Sheet

We are carrying out a research project of opiate users waiting to receive detoxification treatment at Marina House. We would like to find out what clients do during their wait for treatment and the effectiveness of the treatment you receive. We are interested in your drug use, your health, your reasons for seeking treatment and what you expect to gain from treatment.

People who present themselves at Brief Assessment clinic will be randomly split into two groups. One group will receive fast-track treatment and the other group will receive treatment after the normal waiting period. Clients in both groups will receive exactly the same treatment.

Your participation in the project will involve answering three 40-minute questionnaires over the next two months. Interviews will be conducted after brief assessment, two weeks after initial contact and approximately 6 weeks later. These interviews will take place in person or on the telephone.

If you decide not to take up the offer of treatment at Marina House or drop out of treatment we would also like to interview you for the project.

Any information you provide will be kept in the strictest confidence and will not be passed on to any members of staff.

**DEPARTMENT OF HEALTH**

**WAITING LIST STUDY**

**BASELINE INTERVIEW (BRIEF ASSESSMENT)**

## Section A: Demographic

| | |
|---|---|
| Client name | |
| Client code | |
| Date | |
| Sex | |
| Age | |
| Ethnic status | |
| Referrer | |
| Area | |

| 1. | In the last month, how many nights (from 0 to 30) have you slept in the following places: | | | | | |
|---|---|---|---|---|---|---|
| | Own/ relative's home | Friend's/ other people's home | Hostel/ temp. accom. | On the street | Hospital/ treatment centre | Other |
| | | | | | | |

| 2. | In the last month for how many days (from 0 to 30) were you : | | | | |
|---|---|---|---|---|---|
| | In full-time work | In part-time work | Unemployed | In Education | Sickness Benefit |
| | | | | | |

**Section B : Drug and Alcohol Use**

1. Drug & alcohol use in the previous month

a. In the last 30 days, can you tell me how often you have used the following substances, the amount and the main route of use

| Drug | Number of days used | Type (skunk, china white) | Average amount per day | Main route of ingestion | Age first used | Age first IV use | Age of first treatment |
|---|---|---|---|---|---|---|---|
| Heroin | | | grams | | | | |
| Methadone | | | ml | | | | |
| Other opiates | | | mg | | | | |
| Benzodiazepine | | | mg | | | | |
| Crack cocaine | | | grams | | | | |
| Cocaine powder | | | grams | | | | |
| Amphetamines | | | grams | | | | |
| Cigarettes | | | | | | | |
| Cannabis | | | oz/joints | | | | |
| Alcohol | | | units | | | | |

Benzodiazepines: diazepam (valium), temazepam, rohypnol/flunitrazepam, nitrazepam/mogadon

2. Drug and alcohol dependence

a. Over the last year, did you ever think that your ..... use was out of control

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

b. Over the last year did the prospect of not taking ..... make you very anxious or worried?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

c. Did you worry about your ..... use over the last year?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

d. Did you wish you could stop taking ..... over the last year?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

e. How difficult would you find it to stop, or go without ..... ?

| | Easy | Fairly Difficult | Very Difficult | Impossible |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

**Section C: Overdose**

| | | |
|---|---|---|
| 1. Have you had a drugs in the last 30 days (if no, skip to Q.2) | YES | NO |
| a. How many overdoses have you had in the last 30 days | | |
| b. Dates of the overdoses in the last 30 days | | |
| c. Which drugs did you take on the day of the last overdose | | |
| d. Why do you think the overdose happened | | |
| e. How was the overdose resolved | | |
| f. Were you taken to hospital | YES | NO |

| | | |
|---|---|---|
| 2. Have you witnessed a drugs overdose in the last 30 days | YES | NO |
| a. How many overdoses have you witnessed in the last 30 days | | |
| b. How many of these overdoses proved fatal | | |
| c. Dates of the witnessed overdoses in the last 30 days | | |
| d. Which drugs do you know were taken on the day of the last overdose | | |
| e. How was the overdose resolved | | |
| f. What did you do | | |
| g. What did others present do | | |

**Section D: Injecting Behaviour**

1. When did you last inject ? _____ days/ mths ago

2. Have you ever used a syringe that has been cleaned after someone else has used it?

□ Yes □ No If YES how often? _____Why?_____

□ Mainly with:( partner/other)

□ Only with: (partner/other)

3. Have you ever used a syringe that has not been cleaned after someone else has used it?

□ Yes □ No If YES how often? _____

Why?_____

□ Mainly with: (partner/other)

□ Only with: (partner/other)

4. Who first introduced you to injecting drugs?_____

**Section E : Treatment History**

| 1 | | Alcohol | Drug | Other Mental Health |
|---|---|---|---|---|
| a | How many times have you attended in-patient treatment? | | | |
| b | How many times have you attended for out-patient treatment? | | | |
| c | When was your most recent treatment period? | In<br>Out | In<br>Out | In<br>Out |
| d | Location of this treatment? | In<br>Out | In<br>Out | In<br>Out |
| e | Duration of treatment? | In<br>Out | In<br>Out | In<br>Out |
| f | Did you complete the treatment? | In<br>Out | In<br>Out | In<br>Out |
| g | Reason for leaving treatment? | In<br>Out | In<br>Out | In<br>Out |
| h | Were you abstinent after his treatment?<br>If so, for how long? | In<br>Out | In<br>Out | In<br>Out |

## Section F : Personal Alcohol / Drug Use Questionnaire (SOCRATES)

| | Main Drug: Heroin | Strongly Disagree | Disagree | Undecided or Unsure | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | I really want to make changes in my drug use | | | | | |
| 2 | Sometimes I wonder if I am an addict | | | | | |
| 3 | If I don't change my drug use soon, my problems are going to get worse | | | | | |
| 4 | I have already started making some changes in my drug use | | | | | |
| 5 | I was using too much at one time, but I've managed to change my drug use | | | | | |
| 6 | Sometimes I wonder if my drug use is hurting other people | | | | | |
| 7 | I have a drug problem | | | | | |
| 8 | I'm not just thinking about changing my drug use, I'm already doing something about it | | | | | |
| 9 | I have already changed my drug use, and I am looking for ways to keep from slipping back to my old pattern | | | | | |
| 10 | I have a serious problem with drugs | | | | | |
| 11 | Sometimes I wonder if I am in control of my drug use | | | | | |
| 12 | My drug use is causing a lot of harm | | | | | |
| 13 | I am actively doing things now to cut down or stop drug use | | | | | |
| 14 | I want help to keep from going back to the drug use problems that I had before | | | | | |
| 15 | I know that I have a drug use problem | | | | | |
| 16 | There are times when I wonder if I take drugs too much | | | | | |
| 17 | I am an drug addict | | | | | |
| 18 | I am working hard to change my drug use | | | | | |
| 19 | I have made some changes in my drug use, and I want some help to keep me from going back to the way I used to use | | | | | |

**Section G : Psychological and Physical Health**

1. Health in the last month

How often in the last month have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Poor appetite | | | | | |
| Tiredness / fatigue | | | | | |
| Nausea | | | | | |
| Stomach pains | | | | | |
| Difficulty breathing | | | | | |
| Chest pains | | | | | |
| Joint / bone pain | | | | | |
| Muscle pain | | | | | |
| Numbness/tingling | | | | | |
| Tremors (shakes) | | | | | |

2. Psychological health in the last month

How often in the last month have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Feeling tense or keyed up | | | | | |
| Suddenly scared for no reason | | | | | |
| Feeling fearful/afraid | | | | | |
| Nervousness or shakiness inside | | | | | |
| Spells of panic or terror | | | | | |
| Feeling hopeless about the future | | | | | |
| Feelings of worthlessness | | | | | |
| Feeling no interest in things | | | | | |
| Feeling lonely | | | | | |
| Thoughts of ending your life | | | | | |

**Section H : Treatment Perceptions/ Assessment Perceptions**

1. Please tell me to what extent you agree or disagree with each of the following

| I came into treatment/ I chose to start treatment.... | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| to please my family | | | | | |
| to please my children | | | | | |
| to please my partner | | | | | |
| through my own choice | | | | | |
| because of legal problems | | | | | |
| because of health concerns (specify) | | | | | |
| because of work reasons | | | | | |
| because I was fed up of using | | | | | |
| other reasons (specify) | | | | | |

2.

a. When did you decide to seek treatment for your drug use? _____

b. If applicable:

Why have you waited so long before coming to Marina House since deciding to seek treatment?

_____

c.What have been your main worries and concerns about seeking treatment?

_____

_____

**Section I : Social Functioning**

1. Do you currently have a partner? □ Yes □ No

If YES for how long ?_____

2. Have you got family contact? □ Yes □ No

3. Do you have any children? □ Yes □ No

How many of these children live with you? _____

4. How many members of your family are you in contact with? _____

5. Partner's drug and alcohol use

| Is your partner | Yes | No |
|---|---|---|
| a. Currently in treatment | | |
| b. Currently using but not in treatment | | |
| c. Has used but no longer uses | | |
| d. Never used | | |

6. How many members of your family have drug problems?

| none | one | a few | most | all |
|---|---|---|---|---|
| | | | | |

7. How many members of your family have alcohol problems?

| none | one | a few | most | all |
|---|---|---|---|---|
| | | | | |

8. How much time do you spend in the company of people with drug problems?

| no time | less than once a week | at least once a week | most days | every day |
|---|---|---|---|---|
| | | | | |

How many days in the last 90 days?_____

How does this impact on your drug use? _____

9. How much time do you spend in the company of people with alcohol problems?

| no time | less than once a week | at least once a week | most days | every day |
|---|---|---|---|---|
| | | | | |

How many days in the last 90 days? _____

**Section J: Criminal and Drug History**

1. Have you ever been involved in any criminal activity? Yes □ No □

2. Have you ever been in prison? Yes □ How many times? _____
No □

3. Age of first imprisonment? _____

4. Age of last imprisonment? _____

5. Have you committed any of the following in the last 30 days?

| | no of days (0-30) | No of times per day | Total amount earned per day (£). | No of arrests in 30 days | How often have you done it to pay for drugs |
|---|---|---|---|---|---|
| Drug selling | | | | | |
| Drug Running | | | | | |
| Other drug offence | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Shoplifting | | | | | |
| Burglary | | | | | |
| Robbery | | | | | |
| Receiving / Handling stolen goods | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Car crimes | | | | | |
| Theft | | | | | |
| Violent crimes | | | | | |
| Drunk and disorderly | | | | | |
| Criminal damage | | | | | |
| Fare evasion | | | | | |
| Driving offences | | | | | |
| Fraud | | | | | |

6. This section is about contact with the criminal justice system in the last 3 months

| | Have you had contact with/been in | No. of times | Length of stay/contact | Reason for contact | Outcome |
|---|---|---|---|---|---|
| a. Policecustody | | | | | |
| b. Court | | | | | |
| c. Prison | | | | | |
| d. Arrest referral | | | | | |
| e. DTTO | | | | | |
| f. CARATS | | | | | |
| g. Probation | | | | | |

**Section K: Treatment Perceptions**

A. MARINA HOUSE

| | Strongly disagree | Disagree | Undecided /not sure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. It was easy to find where Marina House was located | | | | | |
| 2.The facilities at Marina House were clean/hygienic | | | | | |
| 3. The layout/structure of Marina House was off-putting | | | | | |
| 4. I was kept waiting too long in Marina House before being seen for brief assessment | | | | | |

(specify time)_____

5. How did you find out about Marina House?_____

B. BRIEF ASSESSMENT

| | Strongly disagree | Disagree | Undecided /unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I felt that the brief assessment was too intrusive | | | | | |
| 2. I felt the brief assessment got to the route of my problems | | | | | |
| 3. The brief assessment took too long to conduct | | | | | |
| 4.I understand what is going to happen to me after brief assessment | | | | | |

(please specify) _____

5. How did you find out about brief assessment?_____

C. ASSESSOR

| | Strongly disagree | Disagree | Undecided /unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. My assessor was sympathetic towards me | | | | | |
| 2.My assessor appeared suitably experienced to carry out the brief assessment | | | | | |
| 3.My assessor understood my problems | | | | | |
| 4. I feel that the assessor would be competent at helping me with my problems | | | | | |

4. What qualifications do you expect your assessor to have?_____

D. OTHERS

| | Strongly disagree | Disagree | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. The reception staff were friendly towards me | | | | | |
| 2. The other clients in the clinic were off-putting/ intimidating to me | | | | | |

3. Who will be supporting you through your drug treatment? _____

E. EXPECTATIONS

| | Strongly disagree | Disagree | Undecided / unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I am confident that this is the right place for my treatment | | | | | |
| 2. I feel that my treatment needs will be met at Marina House | | | | | |
| 3. I expect to be abstinent from drugs as soon as I start treatment at Marina House | | | | | |
| 4. I am worried that all of my needs will not be addressed | | | | | |

5. How long do you expect to be in treatment at Marina House?

| 1 month | 1 – 3 months | 3 – 6 months | 6 – 12 months | More than 1 year |
|---|---|---|---|---|
| | | | | |

6. How long do you think it will be until you are abstinent from drugs?

| 1 month | 1 – 3 months | 3 – 6 months | 6 – 12 months | More than 1 year |
|---|---|---|---|---|
| | | | | |

7. What do you feel are your chances of successfully quitting drugs?

| Very Unlikely | Unlikely | Undecided/ unsure | Likely | Very likely |
|---|---|---|---|---|
| | | | | |

8. How long do you expect to wait for your treatment to start?

| 1 week | 1 – 4 weeks | 1 -2 months | More than 2 months |
|---|---|---|---|
| | | | |

**DEPARTMENT OF HEALTH**

**WAITING LIST STUDY**

**FULL ASSESSMENT (treatment entry)**

**Section A: Demographic**

| | | | |
|---|---|---|---|
| Client name | | | |
| Client code | | | |
| Date | | | |
| Date of full assessment | | | |
| Dates of dose assessment | | | |
| First appt. date | | | |
| Date of FA interview | | Days in-between | |
| No. of days in treatment/ till treatment starts | | | |

| 1 | Since the last interview (_____days), how many nights have you slept in the following places: | | | | | |
|---|---|---|---|---|---|---|
| | Own/relative's home | Friend's/other people's home | Hostel/temp. accom | On the street | Hospital/ treatment centre | Other |
| | | | | | | |

| 2. | Since the last interview (_____days) how many days were you : | | | | |
|---|---|---|---|---|---|
| | In full-time work | In part-time work | Unemployed | In Education | Sickness Benefit |
| | | | | | |

| 3. Is your address the same as when you first initiated contact with the clinic?<br>YES / NO |
|---|
| New address: |
| |

4.Will entering treatment influence your ability to –

| | YES | NO | N/A |
|---|---|---|---|
| a. Work/attend college | | | |
| b. Look after children | | | |
| c. Look after other dependent relatives | | | |

**Section B : Drug and Alcohol Use**

1. Drug & alcohol use since last interview

Since your last interview (____days) can you tell me how often you have used the following non-prescribed substances, the amount and the main route of use

| Drug | Number of days used | Type (skunk, china white) | Average amount per day | Main route of ingestion |
|---|---|---|---|---|
| Heroin | | | grams | |
| Methadone | | | ml | |
| Other opiates | | | mg | |
| Benzodiazepines | | | mg | |
| Crack cocaine | | | grams | |
| Cocaine powder | | | grams | |
| Amphetamines | | | grams | |
| Cigarettes | | | | |
| Cannabis | | | oz/joints | |
| Alcohol | | | units | |

Benzodiazepines: diazepam (valium), temazepam, rohypnol/flunitrazepam, nitrazepam/mogadon

2. Prescribed drug use

i. Any change in prescription drug use since your last interview? □ Yes □ No

| Drug | Source | Time on script | Amount | Has this changed | If yes, why? |
|---|---|---|---|---|---|
| Methadone | | | | | |
| Diazepam | | | | | |
| Other Benzodiazepines | | | | | |
| Buprenorphine | | | | | |
| Dihydrocodeine | | | | | |
| Anti-depressants (specify) | | | | | |
| Other (specify) | | | | | |

ii. How do you feel about the other drugs you are prescribed for your drug problems?

| | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| a. The prescription I receive is not adequate for removing withdrawal symptoms | | | | | |
| b. I am experiencing cravings on the medication I receive | | | | | |
| c. The medication provided is adequate in providing stability for my drug use | | | | | |

3. Drug and Alcohol Dependence

a. Since the last research interview, did you ever think that your ..... use was out of control?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

b. Did the prospect of not taking ..... make you very anxious or worried since the last interview ?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

c. Did you worry about your ..... use since the last interview?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

d. Did you wish you could stop taking ..... since the last interview?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

e. How difficult would you find it to stop, or go without ..... since the last interview?

| | Easy | Fairly Difficult | Very Difficult | Impossible |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

**Section C: Overdose**

| | | |
|---|---|---|
| 1. Have you had a drugs overdose since the last interview (if no, skip to Q.2) | YES | NO |
| a. How many overdoses have you had since the last interview | | |
| b. Dates of the overdoses since last interview | | |
| c. Which drugs did you take on the day of the last overdose | | |
| d. Why do you think the overdose happened | | |
| e. How was the overdose resolved | | |
| f. Were you taken to hospital | YES | NO |

| | | |
|---|---|---|
| 2. Have you witnessed a drugs overdose since the last interview (if no skip to section D) | YES | NO |
| a. How many overdoses have you witnessed since the last interview | | |
| b. How many of these overdoses proved fatal | | |
| c. Dates of the witnessed overdoses since the last interview | | |
| d. Which drugs do you know were taken on the day of the last overdose | | |
| e. How was the overdose resolved | | |
| f. What did you do | | |
| g. What did others present do | | |

**Section D: Injecting Behaviour**

1. When did you last inject? _____ days/months ago

2. Have you used a syringe that has been cleaned after someone else has used it since the last interview?

□ No □ Yes If YES how often? _____

Why? _____

□ Mainly with:(partner/other)

□ Only with:(partner/other)

3. Have you used a syringe that has not been cleaned after someone else has used it since the last interview?

□ No □ Yes If YES how often? _____

Why? _____

□ Mainly with:(partner/other)

□ Only with:(partner/other)

**Section E : Hepatitis and HIV Status**

1. Have you been tested for any of the following since the last interview?

| | Y/N/DK | If YES date when tested | Result (+ve,-ve, refused) | If NO what would you anticipate that you are (+ve, -ve, don't know) |
|---|---|---|---|---|
| Hepatitis C | | | | |
| Hepatitis B | | | | |
| HIV | | | | |

## Section F: Personal Alcohol / Drug Use Questionnaire (SOCRATES)

| | Main Drug: Heroin | Strongly Disagree | Disagree | Undecided or Unsure | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | I really want to make changes in my drug use | | | | | |
| 2 | Sometimes I wonder if I am an addict | | | | | |
| 3 | If I don't change my drug use soon, my problems are going to get worse | | | | | |
| 4 | I have already started making some changes in my drug use | | | | | |
| 5 | I was using too much at one time, but I've managed to change my drug use | | | | | |
| 6 | Sometimes I wonder if my drug use is hurting other people | | | | | |
| 7 | I have a serious problem with drugs | | | | | |
| 8 | I'm not just thinking about changing my drug use, I'm already doing something about it | | | | | |
| 9 | I have already changed my drug use, and I am looking for ways to keep from slipping back to my old pattern | | | | | |
| 10 | I used to have a problem with drugs but not any more | | | | | |
| 11 | Sometimes I wonder if I am in control of my drug use | | | | | |
| 12 | My drug use is causing a lot of harm | | | | | |
| 13 | I am actively doing things now to cut down or stop drug use | | | | | |
| 14 | I want help to keep from going back to the drug use problems that I had before | | | | | |
| 15 | I know that I have a drug use problem | | | | | |
| 16 | There are times when I wonder if I take drugs too much | | | | | |
| 17 | I am an drug addict | | | | | |
| 18 | I am working hard to change my drug use | | | | | |
| 19 | I have made some changes in my drug use, and I want some help to keep me from going back to the way I used to use | | | | | |

**Section G : Psychological and Physical Health**

1.Health since last interview

How often since the last interview have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Poor appetite | | | | | |
| Tiredness / fatigue | | | | | |
| Nausea | | | | | |
| Stomach pains | | | | | |
| Difficulty breathing | | | | | |
| Chest pains | | | | | |
| Joint / bone pain | | | | | |
| Muscle pain | | | | | |
| Numbness/tingling | | | | | |
| Tremors (shakes) | | | | | |

2. Psychological health since last interview

How often since the last interview have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Feeling tense or keyed up | | | | | |
| Suddenly scared for no reason | | | | | |
| Feeling fearful/afraid | | | | | |
| Nervousness or shakiness inside | | | | | |
| Spells of panic or terror | | | | | |
| Feeling hopeless about the future | | | | | |
| Feelings of worthlessness | | | | | |
| Feeling no interest in things | | | | | |
| Feeling lonely | | | | | |
| Thoughts of ending your life | | | | | |

3.Have you had any of the following at Marina House or elsewhere since brief assessment?

| | Yes | No | What were they? | Have you benefited from them? |
|---|---|---|---|---|
| Health assessment | | | | |
| Psychiatric assessment | | | | |
| Health intervention | | | | |
| Psychiatric intervention | | | | |

Have any specific needs been identified from these assessments (e.g. dual diagnosis)? (specify) _____

**Section H : Treatment Preparations**

1. Have you been receiving support from anyone with regards to your drug problem during your wait for treatment at Marina House to start?

| | Contact | | Do they know about your drug use? | | Do they know about your treatment plans? | | Have they been supportive? | | Do you feel you need their help? | |
|---|---|---|---|---|---|---|---|---|---|---|
| | YES | NO | YES | NO | YES | NO | YES | NO | YES | NO |
| | | | | | | | | | | |
| a. Partner | | | | | | | | | | |
| b. Parents | | | | | | | | | | |
| c. Children | | | | | | | | | | |
| d. Other family members | | | | | | | | | | |
| e. Using friends | | | | | | | | | | |
| f. Non-using friends | | | | | | | | | | |
| g. G.P. | | | | | | | | | | |
| h. Social services | | | | | | | | | | |
| i. Voluntary agencies | | | | | | | | | | |
| j. Helplines | | | | | | | | | | |
| k. A&E | | | | | | | | | | |
| l. AA/NA | | | | | | | | | | |
| m. Other services (specify) | | | | | | | | | | |

2.How has your treatment motivation changed since your last interview?

| | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| a. I have stopped using and do not intend to use again | | | | | |
| b. I have gradually reduced my drug use | | | | | |
| c. I have made no changes in my drug use | | | | | |
| d. I will have one last binge before stopping my drug use | | | | | |
| e. I have increased my drug use | | | | | |
| f. I will consider stopping my drug use | | | | | |
| g. I have unsuccessfully tried to reduce my drug use | | | | | |

3.To what extent have you been preparing for treatment since brief assessment?

| | Strongly disagree | Disagree | Undecided | Agree | Strongly agree | Has it helped you prepare? |
|---|---|---|---|---|---|---|
| a. I have been seeking support from my non-using friends | | | | | | |
| b. I have reduced contact with my dealer | | | | | | |
| c. I have reduced contact with my drug-using friends | | | | | | |

4. Have you been given advice about any of the following during your visits to the clinic?

| | BA | FA | Have you acted on this advice | Details |
|---|---|---|---|---|
| a. HIV awareness/testing | | | | |
| b. Sterilising equipment | | | | |
| c. Hep B/ C testing | | | | |
| d. Hep B immunisation | | | | |
| e. Advice on safe use | | | | |
| f. Advice on managing treatment | | | | |
| g. Information on other services available | | | | |
| h. Clear guidelines about treatment | | | | |
| i. Encouragement about reducing drug use | | | | |
| j. Leaflets on clinic services | | | | |
| k. Clear treatment plan | | | | |
| l. Treatment contract | | | | |
| m. Primary healthcare advice | | | | |
| n. Overdose prevention | | | | |

5.To what extent do you agree or disagree with each of the following

| I came into treatment/ I chose to start treatment… | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| to please my family | | | | | |
| to please my children | | | | | |
| to please my partner | | | | | |
| through my own choice | | | | | |
| because of legal problems | | | | | |
| because of health concerns (specify) | | | | | |
| because of work reasons | | | | | |
| because I was fed up of using | | | | | |
| other reasons (specify) | | | | | |

6.Since the last interview how the following factors changed?

| | Improved | Stayed the same | Got worse | NA |
|---|---|---|---|---|
| a. Finances | | | | |
| b. Debt | | | | |
| c. Relationship with parents | | | | |
| d. Relationship with partner | | | | |
| e. Relationship with dependent children | | | | |
| f. Relationship with non-using friends | | | | |
| g. Relationship with using friends | | | | |
| h. Relationship with neighbours | | | | |
| i. Housing | | | | |
| j. Confidence | | | | |
| k. Assertiveness | | | | |
| l. Employment | | | | |
| m. Health problems | | | | |
| n. Crime | | | | |

7. Have you experienced any of the following feelings about treatment since the last interview?

| | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| a. I do not think I am motivated enough | | | | | |
| b. I do not really want to stop using | | | | | |
| c. I do not think this is the right treatment for me | | | | | |
| d. I am not ready to detox | | | | | |
| e. Even if I detox I doubt if I will stay clean | | | | | |
| f. I am more committed to treatment | | | | | |
| g. I am uncertain about what I want | | | | | |

8. Have you tried to arrange rehabilitation once your treatment at Marina House finishes? □ Yes □ No

a. What action have you taken?_____

b. What has been the outcome of this action?_____

**Section I : Social Functioning**

1. How much time have you spent in the company of people with other drug users since the last research interview?

| No time | Less than once a week | At least once a week | Most days | Every day |
|---|---|---|---|---|
| | | | | |

How many days in the last _____ days? _____

How does this impact on your drug use? _____

2. How much time have you spent in the company of people with alcohol problems since your last interview?

| No time | Less than once a week | At least once a week | Most days | Every day |
|---|---|---|---|---|
| | | | | |

How many days in the last _____ days? _____

3. How does your social life affect your drug use?

| | yes | no |
|---|---|---|
| a. Partner uses | | |
| b. Partner deals | | |
| c. Most friends use | | |
| d. A few friends use | | |
| e. Parents use | | |
| f. Most neighbours use | | |

4. Has the drinking or drug use of those around you changed since you started coming to Marina House?

| | Increased | | Decreased | | No change | |
|---|---|---|---|---|---|---|
| | alcohol | drugs | alcohol | drugs | alcohol | drugs |
| a. Partner | | | | | | |
| b. Using friends | | | | | | |
| c. Non-using friends | | | | | | |
| d. Family members | | | | | | |

5.Have you been in any fights/arguments with partner/children/friends since brief assessment? □ Yes □ No

If yes, please specify _____

**Section J : Criminal and Drug History**

1. Have you committed any crimes since the last interview? □ Yes □ No

2. Have you committed any of the following since the last interview?

| | no of days (_____) | No of times per day | Total amount earned (£) per day | No of arrests | How often have you done it to pay for drugs |
|---|---|---|---|---|---|
| Drug selling | | | | | |
| Drug running | | | | | |
| Other drug offence | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Shoplifting | | | | | |
| Burglary | | | | | |
| Robbery | | | | | |
| Receiving / Handling stolen goods | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Car crimes | | | | | |
| Theft | | | | | |
| Violent crimes | | | | | |
| Drunk and disorderly | | | | | |
| Criminal damage | | | | | |
| Fare evasion | | | | | |
| Driving offences | | | | | |
| Fraud | | | | | |

2. This section is about contact with the criminal justice system since the last interview?

| | Have you had contact with/been in | No. of times | Reason for contact | Outcome |
|---|---|---|---|---|
| a. Police custody | | | | |
| b. Court | | | | |
| c. Prison | | | | |
| d. Arrest referral | | | | |
| e. DTTO | | | | |
| f. CARATS | | | | |
| g. Probation | | | | |

**SECTION K: TREATMENT PERCEPTIONS**

A. ASSESSOR AT FULL ASSESSMENT

| | Strongly disagree | Disagree | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I felt that I had a good relationship with my assessor | | | | | |
| 2. I would not like to get my assessor for my key-worker | | | | | |
| 3. My assessor understood my problems | | | | | |
| 4. I do not think my assessor would be competent at helping me with my problems | | | | | |

B. MARINA HOUSE

| | Strongly disagree | Disagree | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I do not feel comfortable coming to Marina House | | | | | |
| 2. I was treated with respect by the reception staff | | | | | |
| 3. I found full assessment disturbing | | | | | |
| 4. I feel I have been made to jump through too many hoops | | | | | |
| 5. I have found the delays frustrating | | | | | |
| 6. I have found the assessments intrusive | | | | | |
| 7. There have been too many stages to go through before entering treatment | | | | | |
| 8. I made a mistake choosing Marina House as my treatment venue | | | | | |

C. EXPECTATIONS

| | Strongly disagree | Disagree | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I am confident that Marina House is the right place for my treatment | | | | | |
| 2. I feel that my treatment needs will be met at Marina House | | | | | |
| 3. I expect to be abstinent from drugs within 6 months of entering treatment at Marina House | | | | | |
| 4. I am worried that all of my needs will not be addressed | | | | | |

5.How long do you expect to be in treatment at Marina House?

| 1 month | 1 – 3 months | 3 – 6 months | 6 – 12 months | More than 1 year |
|---|---|---|---|---|
| | | | | |

6. How long do you think it will be until you are abstinent from all drugs?

| 1 month | 1 – 3 months | 3 – 6 months | 6 – 12 months | More than 1 year |
|---|---|---|---|---|
| | | | | |

7. What do you feel are your chances of successfully quitting drugs?

| Very Unlikely | Unlikely | Undecided/ unsure | Likely | Very likely |
|---|---|---|---|---|
| | | | | |

8. Why did you choose community detox for your treatment needs rather than other forms of treatment (e.g inpatient detox) ?

_____

9.To what extent has your motivation to quit drugs changed since your last interview?

| Increased a lot | Increased a little | No change in motivation | Decreased a little | Decreased a lot |
|---|---|---|---|---|
| | | | | |

**DEPARTMENT OF HEALTH**

**WAITING LIST STUDY**

**Lost-to-treatment Questionnaire**

## Section A: Demographic

| | |
|---|---|
| Client name | |
| Client code | |
| Date | |
| Date of last contact with the clinic | |
| Date of last contact with researcher | |

| 1 | Since the last interview (_____days), how many nights have you slept in the following places: | | | | | |
|---|---|---|---|---|---|---|
| | Own/relative's home | Friend's/other people's home | Hostel/tempaccom | On the street | Hospital/treatment centre | Other |
| | | | | | | |

| 2. | Since the last interview ( _____days) how many days were you : | | | | |
|---|---|---|---|---|---|
| | In full-time work | In part-time work | Unemployed | In Education | Sickness Benefit |
| | | | | | |

**Section B : Drug and Alcohol Use**

1. Drug & alcohol use since last interview

Since the last interview (_____days) can you tell me how often you have used the following non-prescribed substances, the amount and the main route of use

| Drug | Number of days used | Type (skunk, china white) | Average amount per day | Main route of ingestion |
|---|---|---|---|---|
| Heroin | | | grams | |
| Methadone | | | ml | |
| Other opiates | | | mg | |
| Benzodiazepines | | | mg | |
| Crack cocaine | | | grams | |
| Cocaine powder | | | grams | |
| Amphetamines | | | grams | |
| Cigarettes | | | | |
| Cannabis | | | oz/joints | |
| Alcohol | | | units | |

Benzodiazepines: diazepam (valium), temazepam, rohypnol/flunitrazepam, nitrazepam/mogadon

2. Drug and Alcohol Dependence

a. Since your last interview, how often did you think that your ..... use was out of control

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

b. Did the prospect of not taking ..... make you very anxious or worried since your last interview ?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

c. Did you worry about your ..... use since your last interview?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

d. Did you wish you could stop taking ..... since your last interview?

| | Never or almost never | Sometimes | Often | Always or nearly always |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

e. How difficult would you find it to stop, or go without ..... since your last interview?

| | Easy | Fairly Difficult | Very Difficult | Impossible |
|---|---|---|---|---|
| Heroin | | | | |
| Methadone | | | | |
| Benzodiazepines | | | | |
| Crack Cocaine | | | | |
| Cocaine powder | | | | |
| Cannabis | | | | |
| Cigarettes | | | | |
| Alcohol | | | | |

**Section C: Overdose**

| | | |
|---|---|---|
| 1. Have you had a drugs overdose since the last interview (if no, skip to Q.2) | YES | NO |
| a. How many overdoses have you had since the last interview | | |
| b. Dates of the overdoses since last interview | | |
| c. Which drugs did you take on the day of the last overdose | | |
| d. Why do you think the overdose happened | | |
| e. How was the overdose resolved | | |
| f. Were you taken to hospital | YES | NO |

| | | |
|---|---|---|
| 2. Have you witnessed a drugs overdose since the last interview | YES | NO |
| a. How many overdoses have you witnessed since the last interview | | |
| b. Dates of the witnessed overdoses since the last interview | | |
| c. Which drugs do you know were taken on the day of the last overdose | | |
| d. How was the overdose resolved | | |
| e. What did you do | | |
| f. What did others present do | | |

**Section D: Injecting Behaviour**

1. When did you last inject? _____ days/months ago

2. Have you used a syringe that has been cleaned after someone else since the last interview?

□ No □ Yes If YES how often? _____

Why ? _____

□ Mainly with:(partner/other)

□ Only with:(partner/other)

3. Have you used a syringe that has not been cleaned after someone else since the last interview?

□ No □ Yes If YES how often? _____

Why? _____

□ Mainly with:(partner/other)

□ Only with:(partner/other)

## Section E: Personal Alcohol / Drug Use Questionnaire (SOCRATES)

| | Main Drug: Heroin | Strongly Disagree | Disagree | Undecided or Unsure | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | I really want to make changes in my drug use | | | | | |
| 2 | Sometimes I wonder if I am an addict | | | | | |
| 3 | If I don't change my drug use soon, my problems are going to get worse | | | | | |
| 4 | I have already started making some changes in my drug use | | | | | |
| 5 | I was using too much at one time, but I've managed to change my drug use | | | | | |
| 6 | Sometimes I wonder if my drug use is hurting other people | | | | | |
| 7 | I have a drug problem | | | | | |
| 8 | I'm not just thinking about changing my drug use, I'm already doing something about it | | | | | |
| 9 | I have already changed my drug use, and I am looking for ways to keep from slipping back to my old pattern | | | | | |
| 10 | I have a serious problem with drugs | | | | | |
| 11 | Sometimes I wonder if I am in control of my drug use | | | | | |
| 12 | My drug use is causing a lot of harm | | | | | |
| 13 | I am actively doing things now to cut down or stop drug use | | | | | |
| 14 | I want help to keep from going back to the drug use problems that I had before | | | | | |
| 15 | I know that I have a drug use problem | | | | | |
| 16 | There are times when I wonder if I take drugs too much | | | | | |
| 17 | I am an drug addict | | | | | |
| 18 | I am working hard to change my drug use | | | | | |
| 19 | I have made some changes in my drug use, and I want some help to keep me from going back to the way I used to use | | | | | |

**Section F : Psychological and Physical Health**

1.Health since the last interview

How often since the last interview have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Poor appetite | | | | | |
| Tiredness / fatigue | | | | | |
| Nausea | | | | | |
| Stomach pains | | | | | |
| Difficulty breathing | | | | | |
| Chest pains | | | | | |
| Joint / bone pain | | | | | |
| Muscle pain | | | | | |
| Numbness/tingling | | | | | |
| Tremors (shakes) | | | | | |

2.Psychological health since the last interview

How often since the last interview have you experienced the following?

| | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|
| Feeling tense or keyed up | | | | | |
| Suddenly scared for no reason | | | | | |
| Feeling fearful/afraid | | | | | |
| Nervousness or shakiness inside | | | | | |
| Spells of panic or terror | | | | | |
| Feeling hopeless about the future | | | | | |
| Feelings of worthlessness | | | | | |
| Feeling no interest in things | | | | | |
| Feeling lonely | | | | | |
| Thoughts of ending your life | | | | | |

**Section G : Dropping out**

1.Reasons for not starting treatment?

| | Not at all | A little | Quite a lot | A lot | N A |
|---|---|---|---|---|---|
| a. I felt I was not making any progress in reducing my drug use | | | | | |
| b. I was experiencing withdrawals I could not cope with | | | | | |
| c. I could not control my drug use | | | | | |
| d. I am not ready for treatment | | | | | |
| e. Unhappy with brief assessment | | | | | |
| f. Unhappy with full assessment | | | | | |
| g. Unhappy with the treatment offered (specify) | | | | | |
| h. Not the right type of treatment for my needs | | | | | |
| i. Dissatisfied with the range of treatment options offered | | | | | |
| j. I felt I could complete detox without assistance | | | | | |
| k. I needed urgent in-patient detox | | | | | |
| l. Dissatisfaction with dispensing/prescribing (delete) | | | | | |
| m. I did not get on with my key worker | | | | | |
| n. My keyworker was not supportive | | | | | |
| o. Transferred by Marina House to another service (specify) | | | | | |
| p. Moved out of the area | | | | | |
| q. Preferred other treatment offered elsewhere | | | | | |
| r. Court/legal problems ( specify) | | | | | |
| s. Attending treatment was interfering with my employment/training/education responsibilities (delete) | | | | | |
| t. Discharged from treatment | | | | | |
| u. I could not make the appointments | | | | | |
| v .I did not like the structure of the clinic | | | | | |
| w. Unhappy with the delay for treatment stating | | | | | |
| x. Other patients made me feel uncomfortable | | | | | |
| y. Other reason (specify) | | | | | |

I was discharged from treatment because -

| | Yes | No |
|---|---|---|
| a. Failure to keep appointments | | |
| b. Continued use of illegal/illicit drug | | |
| c. Conflicts with staff | | |
| d. Conflicts with other clients | | |

2. Have you been in contact with any other individuals or agencies concerning drug treatment since your last research interview?

| | How often seen | Reason for contact | Type of treatment received | Is this on-going | Are you satisfied with the support you receive |
|---|---|---|---|---|---|
| 1. G.P | | | | | |
| 2. Drug treatment service | | | | | |
| 3. Voluntary agencies | | | | | |
| 4. Helplines | | | | | |
| 5. A & E | | | | | |
| 6. Hospital detox | | | | | |
| 7.Mental health/Dual diagnosis | | | | | |
| 8. AA/NA | | | | | |
| 9.Other (specify) | | | | | |

3. Did you experience any of the following feelings about coming into treatment?

| | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| a. I did not think I was motivated enough | | | | | |
| b. I did not really want to stop using | | | | | |
| c. I did not think Marina House was the right treatment venue for me | | | | | |
| d. I was not ready to detox | | | | | |
| e. Even if I detoxed I did not think I would stay clean | | | | | |
| f. I was committed to the treatment | | | | | |
| g. I was uncertain what I wanted | | | | | |

**Section H : Social Functioning**

1.How much time have you spent in the company of people with drug problems since the last interview?

How many days in the last _____ days ? _____

How does this impact on your drug use? _____

2. How much time have you spent in the company of people with alcohol problems since the last interview?

| None | A few days | At least once a week | Most days | Every day |
|---|---|---|---|---|
| | | | | |

3. How does your social life affect your drug use?

| | Yes | No |
|---|---|---|
| a. Partner uses | | |
| b. Partner deals | | |
| c. Most friends use | | |
| d. A few friends use | | |
| e. Parents use | | |
| f. Other members of household use | | |
| g. Most neighbours use | | |

4. Has the drinking or drug use of those around you changed since you started coming to Marina House?

| | Increased | | Decreased | | No change | |
|---|---|---|---|---|---|---|
| | alcohol | drugs | alcohol | drugs | alcohol | drugs |
| a. Partner | | | | | | |
| b. Using friends | | | | | | |
| c.Non-using friends | | | | | | |
| d. Family members | | | | | | |

5.How have your friends'/partner's drug use influenced your decision to drop-out of treatment?

| | Yes | No |
|---|---|---|
| a. Temptation too hard to resist when people around me are using | | |
| b. Pressure to resume drug use from others | | |
| c. Given drugs by partner/friend | | |
| d. Drop-out not related to drug use | | |

**Section I : Criminal and drug history**

1. Have you committed any crimes since the last interview? □ Yes □ No

2. Have you committed any of the following since the last interview?

| | no of days (___days) | No of times per day | Total amount earned (£) per day | No of arrests | How often have you done it to pay for drugs |
|---|---|---|---|---|---|
| Drug selling | | | | | |
| Drug running | | | | | |
| Other drug offence | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Shoplifting | | | | | |
| Burglary | | | | | |
| Robbery | | | | | |
| Receiving / Handling stolen goods | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Car crimes | | | | | |
| Theft | | | | | |
| Violent crimes | | | | | |
| Drunk and disorderly | | | | | |
| Criminal damage | | | | | |
| Fare evasion | | | | | |
| Driving offences | | | | | |
| Fraud | | | | | |

3. This section is about contact with the criminal justice system since the last interview

| | Have you had contact with/been in | Number of times | Reason for contact | Outcome |
|---|---|---|---|---|
| a. Police custody | | | | |
| b. Court | | | | |
| c. Prison | | | | |
| d. Arrest referral | | | | |
| e. DTTO | | | | |
| f. CARATS | | | | |
| g. Probation | | | | |

**SECTION J: TREATMENT PERCEPTIONS**

A.MARINA HOUSE

| | Strongly disagree | Disagree | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I did not feel comfortable coming to Marina House | | | | | |
| 2. I was treated with respect by the reception staff | | | | | |
| 3. I found one-to-one sessions with my key worker disturbing | | | | | |
| 4. I felt I was made to jump through too may hoops at Marina House | | | | | |
| 5. I found the delays frustrating | | | | | |
| 6. I found the assessments intrusive | | | | | |
| 7. There were too many stages to go through before receiving treatment | | | | | |
| 8. I made a mistake choosing Marina House as my treatment venue | | | | | |

B. ASSESSOR

| | Strongly disagree | Disagree | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I felt that I have a good relationship with my key worker | | | | | |
| 2. My key worker understood what I was going through | | | | | |
| 3. I did not think my key worker was experienced enough to help | | | | | |
| 4. I did not have enough contact with my key worker | | | | | |
| 5. I would have liked more assistance from my key worker | | | | | |
| 6. My key worker provided sufficient support me while I was in contact with the clinic | | | | | |
| 7. My key worker has not been available when I needed to contact him/her | | | | | |

1. What do you feel are your chances of successfully quitting drugs now you have left treatment?

| Very Unlikely | Unlikely | Undecided/ unsure | Likely | Very likely |
|---|---|---|---|---|
| | | | | |

2..To what extent has your motivation to quit drugs changed since your initial clinic contact?

| Increased a lot | Increased a little | No change in motivation | Decreased a little | Decreased a lot |
|---|---|---|---|---|
| | | | | |

3. When did you first decide to leave treatment?_____

4.. Were there any specific events which made you want to leave treatment at this time?
_____

5.How are you planning to manage your drug use now you have left treatment?

| | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|---|---|---|---|---|---|
| a. I have stopped using and do not intend to use again | | | | | |
| b. I have gradually reduced my drug use | | | | | |
| c. I have made no changes in my drug use of | | | | | |
| d. I will have one last binge before stopping my drug use | | | | | |
| e. I have increased my drug use | | | | | |
| f. I will consider stopping my drug use | | | | | |
| g. I have unsuccessfully tried to reduce my drug use | | | | | |

6.What did you want from treatment that you did not receive?_____

7.To what extent would you be willing to try drug treatment again?

| | Strongly disagree | Disag | Undecided/ unsure | Agree | Strongly agree |
|---|---|---|---|---|---|
| a. I would be willing to try treatment at Marina House again | | | | | |
| b. I would be willing to try drug treatment at a different venue | | | | | |
| c. I will try to stop using at home | | | | | |
| d. I would need in-patient detox | | | | | |
| e. My experiences at Marina House have put me off drug treatment | | | | | |
| f. I am not able to stop using now | | | | | |

**Categories used for ethnicity and relationship status**

**Ethnicity**

| |
|---|
| White |
| White British |
| White Irish |
| Other White |
| Mixed |
| White and Black Caribbean |
| White and Black African |
| White and Asian |
| Other Mixed |
| Asian or Asian British |
| Indian |
| Pakistani |
| Bangladeshi |
| Other Asian |
| Black or Black British |
| Black Caribbean |
| Black African |
| Other Black |
| Chinese or Other Ethnic Group |
| Chinese |
| Other Ethnic Group |

**Relationship status**

Single/never married

Married(first marriage)

Re-married

Separated (but still legally married)

Divorced

Widowed

**SOCRATES Scoring Form – 19 items Version 8.0**

| Recognition | Ambivalence | Taking Steps |
|---|---|---|
| 1 ---------- | 2 ---------- | 4 ---------- |
| 3 ---------- | | 5 ---------- |
| | 6 ---------- | |
| 7 ---------- | | 8 ---------- |
| | | 9 ---------- |
| 10 ---------- | 11---------- | 13 ---------- |
| 12 ---------- | | 14---------- |
| 15 ---------- | 16 ---------- | 18 ---------- |
| 17 ---------- | | 19 ---------- |

| | | | |
|---|---|---|---|
| TOTALS | Re ---------- | Am ---------- | TS ---------- |
| Possible range | 7-35 | 4-20 | 8-40 |

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RESEARCH ARTICLE

# The relative impact of waiting time and treatment entry on drug and alcohol use

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**Abstract**

*One hundred and twenty-three treatment-seeking substance misusers were recruited to a study assessing the early impact of treatment. Participants were interviewed at treatment entry and 3 and 6 months later, regardless of their treatment status (i.e. including those who had dropped out of treatment), while additional data were obtained from the two assessment interviews carried out prior to the initiation of treatment. Three consistent observations can be applied to both the opiate misuser (n = 61) and problem drinker samples (n = 62): (1) the period of pre-treatment wait (mean of 8 weeks) was characterized by stable patterns of substance misuse with no significant 'spontaneous' improvement in indices of severity of drug or alcohol problems; (2) the period immediately following initiation of treatment was associated with substantial reductions in the quantity and frequency of substance use, an effect not influenced by the length of time for treatment initiation; (3) these benefits are maintained to 6 months after treatment initiation. The waiting period for treatment initiation does not seem to be characterized by significant changes in drug or alcohol use patterns, at least among those who made it into treatment, with clear and sustained improvements irrespective of the length of treatment wait.*

## Introduction

During recent decades, treatment outcome research has yielded a considerable volume of evidence for the effectiveness of drug abuse treatment across a variety of treatment settings and client populations.[1–3] Benefits of treatment include reductions in drug use and criminal behaviour and improvements in physical, psychological and social functioning. Similarly, alcohol treatment outcome studies have clearly demonstrated reductions in alcohol use and improvements in life adjustment.[4,5] Significant quality of life changes, including life situation, depression and physical and psychological symptomatology, have been reported for patients within a 12-week follow-up period after residential alcohol detoxification in those who had remained abstinent.[6]

Despite considerable benefits from treatment, a significant proportion of clients continue to use illicit opiates and other drugs while in treatment[1,7] and experience a range of other problems. Attrition from treatment programmes, for example, is a major concern, with longer time in treatment associated with better outcomes.[8,9] Treatment outcome studies focusing on individuals with alcohol problems have reported that this client group are poor outpatient attenders with many dropping out of treatment after the first clinic

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session.[10,11] Length of time in treatment has not always been associated with better outcomes in alcohol studies. Long *et al.*[12] failed to show differences between longer and shorter treatment tenures in alcohol inpatient programmes in terms of both drinking indices and global outcome measures at 6–12 weeks post-treatment.

Long waiting periods prior to entering treatment have been cited as a contributory factor to a failure to initiate treatment once the waiting period is over,[13,14] to compliance deficits during treatment[15] and to treatment attrition.[16] Drug users on waiting lists reported returning to their drug-using life-style and losing motivation to change by the time a treatment place became available.[17] However, research concerning the impact of waiting times on treatment outcomes are neither comprehensive nor consistent in their findings.[18,19]

Delays in initiating treatment may deter the unmotivated and bias recruitment and retention in favour of those users most likely to benefit from treatment.[20] However, waiting lists and delays intended to screen out unmotivated individuals often fail to achieve this objective[21] while clients admitted to treatment shortly after being seen for assessment do not necessarily persist with treatment.[15,18] There is little evidence that either reduced waiting time increases retention nor that increased waiting times are associated with higher patient motivation.

Urschel *et al.*[13] found that the majority of untreated drug users on a waiting list reported significant increases in the severity of their drug use problems over a 4-week waiting period. Forty-eight per cent reported increased severity of their drug and alcohol problems, with 18% reporting decreased problem severity. French & Safford[22] found that 35% of those who were not injecting drugs at the time of initial clinic contact had either started or resumed injecting by the time of admission one to 4 months later. Bell *et al.*[21] found that heroin addicts entering maintenance after a wait of up to 8 weeks were not only more likely to be discharged or drop out of treatment, they were also significantly more likely to use heroin during treatment compared to a sample of rapid intake clients who commenced treatment the same day as initial assessment.

In an attempt to provide limited services to heroin users who would otherwise be on waiting lists, Yancovitz *et al.*[23] studied an interim clinic providing methadone medication but no counselling services. No differences were found in the illicit drug use at intake between clients admitted to the immediate intake interim clinic or those assigned to a 3-month waiting list group in which no treatment was offered. However, 1-month urinalysis follow-up data showed a significant reduction of heroin use in the immediate entry group (63% positive at intake compared with 29% positive at 1 month) with no change in the heroin use of the standard waiting list group. There was a trend towards illicit methadone use in both groups once in treatment.

The current study assesses the effect of waiting times to enter treatment by examining changes in patterns of drug and alcohol use over a 9-month period that incorporates time on a waiting list and the first 6 months of treatment in a cohort of substance users accessing outpatient drug and alcohol treatment services.

## Method

One hundred and twenty-three individuals seeking community outpatient drug or alcohol treatment in South London were recruited between March 1998 and May 1999. Both the Community Drug Team (CDT) and the Community Alcohol Team (CAT) are based in the same building (Marina House) and both are supported by the same consultant psychiatrists. Typically individuals present themselves, either by self-referral or referral by general practitioner (GP) or other service, at an open-access clinic for a brief assessment by a drug or alcohol worker. After this initial clinic contact clients have to wait for a period of around 6–7 weeks for a full assessment and a further wait of 2–3 weeks for treatment to commence in both services. Treatment at the clinic is provided on an abstinence to maintenance model and supports patients in their attempts to reduce their use of alcohol and drugs. Patients are offered weekly or fortnightly appointments with a specialist drugs nurse and ancillary services are provided if required.

All new patients were approached in the clinic during their first full treatment appointment and asked if they would like to be involved in the study. Patients were provided with an information sheet by the drug or alcohol worker they were seeing and, if they consented to participate, the initial research interview was carried out that day (in a clinic interview room by an independent researcher). Minimal exclusion criteria were employed—only patients who had been 'fast-

**Table 1.** *Data collection rates from clinic records and research interviews*

| Date | Alcohol *n*(%) | Drug *n*(%) | Total *n*(%) |
|---|---|---|---|
| B/A clinic assessment | 58 (94) | 51 (84) | 109 (89) |
| F/A clinic assessment | 60 (97) | 53 (87) | 113 (92) |
| Intake interview | 62 (100) | 61 (100) | 123 (100) |
| 3-month interview | 46 (74) | 47 (77) | 93 (76) |
| 6-month interview | 50 (82) | 52 (85) | 102 (83) |

tracked' (entering treatment without standard waiting) on clinical grounds were excluded. This meant that pregnant treatment seekers and those with a dual diagnosis were not included in the present study. This group were excluded only because they did not have to wait for treatment and, this apart, all other treatment seekers willing to take part were included.

All prospective interviews were carried out confidentially by a trained researcher independent of the clinical team at the clinic. After the first interview at the time of recruitment, subsequent interviews were conducted 3 and 6 months later, regardless of treatment status. Follow-up interviews with those patients still in treatment were conducted in the clinic during one of their regular treatment appointments.

Follow-up interviews with those clients no longer in treatment were conducted in the participants' homes or a mutually agreed venue. Safety precautions during these visits were followed at all times, with interviews at patients' homes requiring the involvement of two trained researchers and telephone contact with the research centre before and after the interview. Retrospective data were also gathered from the brief and full clinical assessment forms, completed by the clinical staff as part of the assessment procedure and retained in the client notes. The structured interview lasted for approximately 25 minutes and covered sociodemographic data and information on drug and alcohol use in the previous month, treatment history, physical and psychological health, risk behaviour, severity of dependence, treatment motivation and social functioning.

The following standardized instruments were used within the interviews—Readiness to Change questionnaire,[24] CAGE drinking questionnaire,[25] Severity of Alcohol Dependence Questionnaire,[27] SOCRATES[27] and the Maudsley Addiction Profile.[28]

*Data analysis*

The data were analysed using repeated-measures *t*-tests for changes over time in drug and alcohol and other key variables.

## Results

*Demographics*

Of the 123 clients interviewed, 92 were male (74.8%) and 31 female (25.2%). Sixty-two had primary alcohol problems and 61 had opiate problems. The sample had a mean age of 36.2 years of age ( ± 9.2), the majority (83.7%) were white, 78 (63.4%) were single, and 107 (87%) lived in their own home. Information from 109 brief assessments and 113 full assessments was gathered retrospectively. Ninety-three (76%) participants were re-interviewed around 3 months later (46 alcohol and 47 drug clients) and 102 (83%) were re-interviewed (50 alcohol and 52 drug) 6 months after the initial interview (see Table 1).

*Mean number of days between data collection points*

The number of days between treatment contacts was calculated. The mean number of days between brief and full assessment was 42.9 days for the whole sample (41.8 days for alcohol clients and 44.4 days for drug clients). The period between full assessment and initiation of treatment averaged 17.3 days (16.6 days for alcohol clients and 18.0 days for drug clients).

The mean number of days between intake and 3-month interview was 101 days for the whole sample (98.2 days for alcohol clients and 104 days for drug clients). The mean number of days between 3-month and 6-month interview was 90.4 days for the whole sample (89.2 days for alcohol clients and 91.6 for drug clients). There were no significant differences in waiting time between drug and alcohol clients, for either clinic admission waiting periods or research interviews.

**Table 2.** *Treatment status at each follow-up point by primary substance of misuse*

| | In treatment at 3 months *n*(%) | In treatment at 6 months *n*(%) |
|---|---|---|
| Whole sample | 66 (54) | 48 (39) |
| Alcohol clients | 22 (36) | 9 (19) |
| Drug clients | 44 (72) | 39 (75) |

*Treatment status*

Sixty-six clients (53.6%) (44 drug and 22 alcohol) were still in treatment and 57 (46.4%) had left treatment by 3-month follow-up. Drug clients were significantly more likely to be in treatment at 3-months than the alcohol clients ($\chi^2 = 16.61$, $p < 0.001$). Forty-eight clients (38.7%) were still attending treatment at 6 months, with drug users also significantly more likely to be still in treatment at this point ($\chi^2 = 28.50$, $p < 0.001$) (see Table 2).

As can be seen in Table 2, there was a better follow-up rate at 6 months than 3 months in both the drug and alcohol samples. As many of the clients were no longer in treatment at the 3-month time point it often took a long time to locate and interview these participants, often due to change of residence; however, at the 6-month point, many had been traced. Also a proportion of clients had dropped out of treatment at the 3-month time point but had rejoined treatment by the 6-month collection point.

*Consumption patterns among alcohol clients*

The mean number of days alcohol clients had drunk alcohol in the previous month remained stable from brief assessment to full assessment and treatment intake (see Table 3). The amount of alcohol consumed demonstrated a similar pattern during this period. There was a significant decrease in drinking frequency from 22.9 to 14.2 days ($t = 3.76$, $p < 0.001$) and amount of alcohol consumed ($t = 3.44$, $p < 0.05$) from treatment intake to 3-month follow-up (Fig. 1). The reductions in quantity and frequency of drinking were sustained over the following 3-month period for the whole sample (i.e. regardless of treatment status). None of the other changes (e.g. from 3-month to 6-month assessment) in drinking quantity or frequency attained statistical significance. Patients had to wait between a minimum of 16 days and a maximum 138 days for treatment to start. As an approximate median value, differences in drinking were compared as a function of splitting the alcohol patients into those who had waited 50 days or less ($n = 27$) to start treatment and those who had waited more than 50 days ($n = 35$). There were no significant differences in drinking frequency as a function of waiting time (see Figure 1).

The small number of alcohol clients ($n = 9$) still in treatment at the 6-month follow-up point had a lower average waiting time to start treatment (mean = 40.7 days) than either those who had dropped out by 3 months (mean = 56.2 days) ($n = 44$) or those who dropped out between the 3- and 6-month follow-ups (mean = 69.1 days) ($n = 18$), although this difference did not attain statistical significance ($F = 2.94$, $p = 0.06$).

*Consumption patterns among opiate misuser clients*

Drug clients had been using heroin on a mean of 22.8 days at brief assessment, 24.4 days at full assessment and 23.3 days at treatment intake. This decreased to 7.5 days at 3 months and 9.8 days at 6-month follow-up, as can be seen in Fig. 2. The mean amount of heroin used on a using day remained fairly constant from brief

**Table 3.** *Alcohol consumption in the month prior to each interview*

| | B/A | F/A | intake | 3 months | 6 months |
|---|---|---|---|---|---|
| Mean number of days drank in last month | 25.7 | 24.1 | 22.9 | 14.2 | 15.3 |
| Mean units drunk per day in the last month | 27.8 | 28.5 | 27.3 | 17.9 | 14.5 |

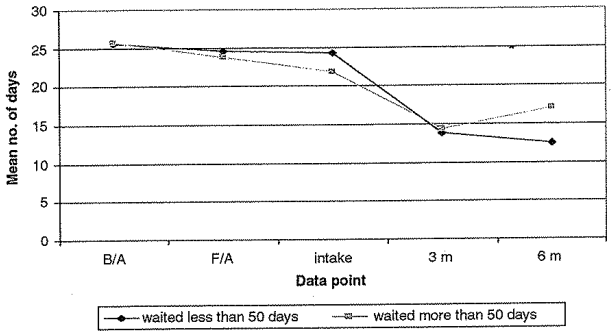


**Figure 1.** *Mean number of days consumed alcohol among alcohol clients.*

assessment, full assessment and treatment intake (0.58 mg, 0.51 mg and 0.57 mg, respectively) but decreased to 0.32 mg at 3 months and 0.29 mg at 6 months after intake. There was a significant increase in the mean number of days of heroin use between brief assessment and full assessment (21.8 vs. 24.5 days, $t = 2.29$, df = 42, $p < 0.05$) and a smaller, but nevertheless still significant decrease between full assessment and intake (24.5 vs. 23.0 days, $t = 1.98$, df = 46, $p < 0.05$) although overall, whilst awaiting entry to treatment, the number of days of heroin use per month remained constant (brief assessment = 22.8 days, intake = 22.8 days). However, there was then a large decrease in frequency of heroin use between treatment intake and follow-up, a reduction from 23.0 to 7.0 days per month ($t = 8.19$, df = 46, $p < 0.001$). Figures diverge from the means presented earlier for cases in which data are missing for one half of the matched-pairs analysis.

There was also a significant decrease in the mean number of days drug using clients had used non-prescribed methadone from full assessment to treatment intake ($t = 4.42$, $p < 0.001$) and from 3 to 6 months ($t = 4.0$, $p < 0.001$). There were no significant changes in frequency of alcohol or crack cocaine use over the period of study.

When those in treatment at 6 months are compared with those who had dropped out of treatment by this point, a major difference emerges. Those remaining in treatment ($n = 39$) report significantly less frequent heroin use 6 months post-intake than those no longer retained in treatment ($n = 9$, 7.0 vs. 16.4 days in the last month, respectively: $t = 2.80$; $p < 0.01$). There was

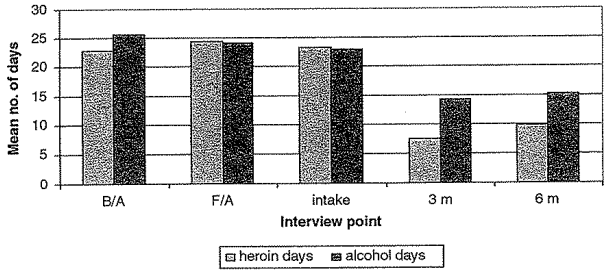


**Figure 2.** *Alcohol and heroin use in the month prior to interview for alcohol and opiate clients.*



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**Table 4.** *Mean number of days per month drug clients used different drugs*

| Date | Heroin (mean no. of days) | Non-prescribed methadone (mean no. of days) |
|---|---|---|
| B/A clinic assessment | 22.8 | * |
| F/A clinic assessment | 24.4 | 16 |
| Intake interview | 23.3 | 7 |
| 3-month interview | 7.5 | 1 |
| 6-month interview | 9.8 | 3 |

* Frequency of non-prescribed methadone use was not collected for research purposes at brief assessment.

no significant difference in the waiting period before treatment initiation between those who were retained in treatment (mean = 57.5 days) and those who dropped out of treatment (mean = 70.6 days: $t = 1.06$, $p = 0.29$, ns). There were no significant effects of physical or psychological health indices, motivational measures and social functioning in the patients at the three time points.

## Discussion

Substance abuse treatment provision is often characterized by relatively lengthy waiting periods prior to treatment initiation. Patients in the current investigation waited for approximately 8–9 weeks for treatment to commence for both alcohol and drug treatment. During this time, there was little evidence of changes in quantity or frequency of drinking in either of the waiting periods measured. The mean amounts of heroin used per day also remained constant over the waiting period, although frequency of use showed some fluctuations over the waiting period (increasing initially and then reducing).

However, there is a clearer change that follows the initiation of treatment for the alcohol sample, this is characterized by a significant reduction in the amount and frequency of alcohol consumed which is sustained over the first 6 months of treatment. A similar pattern was found for heroin, with the most marked difference achieved early in treatment, with a major significant reduction in the number of days of heroin use to a frequency of only a third of the pre-treatment levels and a persistence of this benefit over the 6-month follow-up period. This is consistent with Strang *et al.*'s[29] demonstration of encouraging early benefits within the first month of entry to an outpatient methadone treatment programme based at the same site as the current study.

The length of time between initial assessment and treatment initiation appears to have had little effect on the severity of drug or alcohol problems, with no significant differences in the frequency or quantity of drugs or alcohol consumed between those who had to wait less than 50 days, or more than 50 days, for treatment to commence for both drugs and alcohol, at least for those who initiated treatment.

There are few studies to date concerning the effect of waiting periods on treatment initiation, retention or outcome, and the existing literature is inconsistent in its findings. Even fewer studies focus on the patterns of drug and alcohol use over the waiting period. While the treatment benefits shown in the current study are consistent with a number of major treatment outcomes investigations,[1,3,30,31] the current study adds information about the chronology of this benefit. The data show a considerable stability to the amount of substance use in the pre-treatment period and also a stability (but at a much lower level) in the follow-up period, with the most marked change occurring in the period immediately following treatment entry.

Contrary to the findings of the current investigation, Urschel[13] found the majority of heroin users on a waiting list reported significant increases in the severity of their drug use, although this study was opportunistic and based on a sample of only 26 participants. Similarly, French & Safford[22] found an initiation or return to i.v. drug use in their sample as waiting time increased up to a period of 4 months. However, this is not consistent with the findings of Yancovitz,[23] which found no changes in heroin use during treatment of those clients who had to wait 3 months for treatment initiation. Although the current study



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does not assess problem severity over the waiting period, the findings would not suggest that the waiting period is one of fluctuations in use patterns, at least for the group of patients who do eventually initiate treatment.

Although the current investigation shows positive outcomes after treatment intake, this excludes the potential participants who dropped out during the waiting period. Previous studies[13,32] have reported that a substantial number of clients on waiting lists do not accept treatment at the end of the waiting period. The waiting period and study design in the current analysis may have artificially selected more motivated clients which may partially explain the successful substance use reductions. It may be necessary to question whether clients who accessed treatment more rapidly would show similar or greater reductions in their drug and alcohol use over a similar follow-up period.

The study found no clear effect of length of wait for treatment initiation on outcome—defined as either retention or frequency of substance use. While this suggests that there is no harmful effect of longer waiting periods among those who initiate treatment, further research is required to assess the impact of this non-provision of treatment on those who drop out before treatment begins. In contrast, the current study provides clear evidence that, for drug users, treatment effectiveness is mediated by retention, with users remaining in treatment for 6 months reporting significantly less frequent heroin use.

The comparable stability of the patterning of substance use for drug and alcohol users over the waiting period confers confidence in the robustness of the findings of the current investigation, and has significant ramifications. These results challenge the notion that treatment-seeking occurs only in times of use escalation or crisis, none of the patients in the current study presented to the clinic during a period of intensified crisis. Although substance use does not escalate in the waiting period, the individual may be continuing to be exposed to ongoing health risks (such as needle sharing and overdose) as well as cumulative problems (such as liver damage and injection site injuries). These problems are in addition to the public health concerns posed by drug and alcohol users (disease risk, criminal involvement, and cost to the health and welfare services). The stability of the patterns of illicit drug and alcohol use does not make this safe or acceptable.

A limitation concerning data collection in this study is the reliance on self-reported drug and alcohol use from the patients, rather than information collected from medical notes. Despite the issues around reliability and validity of such data, Hesselbrock *et al.*[33] has shown that self-report data from alcoholics in treatment are often highly correlated with medical records and family reports. Another substantial limitation of the current study is that the sample is fairly small and, crucially, consists only of those who do actually initiate treatment. The sample is a naturalistic one in that it includes a group of treatment initiators in one London treatment setting over a 1-year period and does not permit analysis of those who failed to make it into treatment, those who refused to participate or those who dropped out over the course of the follow-up period. However, the group are probably representative of problem drinkers and drug misusers who present to outpatient treatment services in London and were recruited naturalistically, thus increasing our confidence that their waiting list practices may be representative.

There is little indication from the findings of this study of the need for or potential benefit from interim interventions for or prioritizing clients to receive speedier treatments to prevent increases in drug or alcohol use during the waiting period. This need may nevertheless exist and may have been missed by us if it was found to be particularly strong in those who did not make it into treatment and are thus excluded from the current investigation. Further research is required concerning the drug and alcohol use of those who drop out of treatment prior to treatment initiation (as well as study those who drop out during treatment) and of the cumulative social and health costs accrued even among those who do eventually access treatment.

Studies comparing drug and alcohol use of those clients who have to wait for treatment to those who have rapid entry are also required to further our understanding of the effects of the waiting period on treatment initiation, retention and meaningful treatment success measures. The waiting period is characterized by a continuation of addiction problems at broadly the same high level, with marked reductions only being seen when the substance misuser finally receives treatment. On this basis, it is hard to see any legitimate justification for such waiting lists and the associated harms and costs. Further studies with



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prospective randomized designs are now urgently required to establish more robustly these findings as well as exploring the drop-out population who constitute a 'blind spot' not only in this investigation but also the clinical services themselves.

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Executive Summary

# Randomised clinical trial of the effects of time on a waiting list on clinical outcomes in opiate addicts awaiting out-patient treatment.

Report prepared by:
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# Randomised clinical trial of the effects of time on a waiting list on clinical outcomes in opiate addicts awaiting out-patient treatment.

## Executive Summary

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## Study aims

The study was a randomised clinical trial of drug users seeking out-patient treatment for opiate dependence in the London Boroughs of Lambeth and Southwark. The study's objective was to examine the impact of drug treatment waiting times on the likelihood of treatment entry (after the waiting period), treatment retention and changes in client behaviour, in order to consider the potential benefits of reducing waiting times.

Specifically, the project aims were:

- *To assess if the length of time spent on a waiting list is associated with successful treatment entry.*
- *To assess if the length of time spent on a waiting list is associated with an increased risk of patient drop-out after treatment entry.*
- *To assess if length of time spent on a waiting list is associated with changes in substance use, health, motivation and criminal behaviour.*
- *To examine other factors which may be associated with treatment initiation and retention.*
- *To assess the early benefits of treatment entry compared to waiting list participation.*

## Methods

The study was conducted at an NHS out-patient drug treatment service in South London, providing maintenance and withdrawal programmes, predominately with the use of methadone. One hundred and eighty-two individuals dependent on opiates (heroin, non-prescribed methadone) were recruited to the study over a 28-month period at their initial treatment-seeking contact at the service. Patients were excluded from the study if they were receiving an opiate substitute prescription from another source or if they met the prioritisation criteria set by the service to receive quicker access to treatment (e.g. pregnant drug users, recent release from prison).

Voluntary participants were randomly allocated to one of two treatment-entry groups prior to the start of treatment: (1) accelerated treatment-entry group - clients entered treatment two weeks after initial contact with the service, or (2) standard treatment-entry group - clients were placed on the clinic waiting list and waited for a conventional treatment slot to become available (as would occur under normal clinical procedures), typically involving a 4-12 weeks wait.

Clients were tracked prospectively from the time of first contact with the service to treatment entry (assessment and prescription of medication) at the end of the waiting period, using a series of semi-structured interviews developed to assess substance use, health and psychological functioning, motivation and offending at three different time points. Clients who failed to accept the offer of treatment after the waiting period were contacted for follow-up data. Clients who successfully entered treatment were monitored for an additional year in order to assess treatment retention.

## Findings

### Treatment initiation after the waiting period

Of the 182 patient recruited to the study, 68% entered treatment after the waiting period. Allocation to the accelerated group was associated with a greater number of clients entering treatment (77% of the accelerated group, 59% of the standard group). Fluctuations in treatment demand and treatment resources over the course of the study resulted in a significant variability of waiting times within the standard group (4 -21 weeks). Despite this variation, there was no difference in the rate of treatment entry between shorter and more prolonged waiting periods within this group. This finding may suggest a threshold effect, according to which the beneficial effects of early treatment entry apply only up until a certain time. Patients who failed to enter treatment were more likely to experience a greater delay between initial service contact and scheduled treatment entry and were more likely to use crack cocaine and more frequently, than patients who successfully entered treatment. Patients who entered treatment were also more likely to cite work reasons as important in their decision to seek treatment.

### Treatment retention

64% of the sample that entered treatment were still attending three-months later and 49% continued beyond six months. At this point retention stabilised, with 48% of clients still in treatment at nine months and 43% at 12 months. Accelerated treatment entry was associated with a slightly lower proportion of clients being engaged in treatment at each of the three-monthly follow-up periods over the course of a year. The three-day dose assessment procedure, which occurred approximately 8 days after treatment entry, represented a risk period for treatment attrition, particularly for the accelerated group (28% of the accelerated group compared to 13% of the standard group failed to start or complete the procedure). Older age was the only consistent predictor of treatment retention at each interval studied over the 12-month period.



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## Changes in behaviours

***(1) Over the course of the waiting list:***
Of the 182 patients recruited to the study, follow-up data was obtained from 88% of the sample. For the sample as a whole, regardless of whether they entered treatment, treatment entry group randomisation was associated with different patterns of changes in substance use in the two groups. The prolonged waiting periods of the standard group were associated with reductions in the frequency (days of use per week) of substance use, and the shorter waiting periods of the accelerated group, with fewer clients using smaller quantities. The accelerated group also demonstrated improvements in health symptoms, yet an accompanying decrease in motivation, which suggests that even short delays prior to treatment are associated with reductions in desire to change drug-using behaviours.

***(2) Treatment initiators and non-initiators:***
Comparisons of clients who entered treatment after the waiting period with those who did not, found a greater number of improvements among the initiators, which were mainly confined to the accelerated group. These included, improved drug abstinence rates, reduced quantities of substance use and improvements in psychological health (e.g. depression, anxiety). These improvements were accompanied by reductions in motivation to change substance-use behaviours, over the waiting period. The clients who failed to enter treatment reported a relative stability of behaviours over the waiting period. The changes noted, included, reductions in the frequency of heroin and cannabis use among the standard clients. This may suggest a commitment to substance use change unrelated to clinical involvement.

## Treatment versus waiting list

This study provides evidence of the early impact of treatment participation compared to being on a waiting list for a prolonged duration. The accelerated group, once in treatment, showed significant improvements in substance use, particularly in relation to heroin and non-prescribed methadone use. Treatment entry was also associated with physical and psychological health gains, reduced criminal activity and improved motivation. Less pronounced improvements in heroin use and motivation were also reported among the standard group, although remaining on the waiting list for a comparable amount of time was associated with either consistent or worsening health.

## Implications

The results indicate that while reducing delay was associated with successful treatment entry, it did not improve treatment retention. This finding, in addition to the lack of improvements among clients who fail to enter treatment after the waiting period, all highlight the importance of engaging drug users in treatment as early as possible.

The findings from this study point to several areas of potential improvements in service delivery. Structural factors (i.e. the waiting list) and clinical factors (i.e. crack cocaine use) can now be identified as related to poor attendance for some patients. Treatment providers and policy-makers can modify service delivery to high-risk patients in order to improve treatment initiation and retention. This could include the identification of high-risk subgroups at initial contact with the service for whom special interventions might be developed. Initiatives which permit treatment-seekers to maintain contact with services during the waiting period may also be warranted to ensure that the service continues to be seen as a meaningful resource and to help maintain tenuous motivation. The removal of non-essential components of the pathway into treatment and the provision of enhanced support during these times may minimise attrition at each of the different stages prior to receiving substitute medication. Efforts to re-establish contact with clients who fail to attend after the waiting period, or who drop-out of treatment, may enable clients to brought successfully back into treatment. All of these factors may contribute to the development of services that are better prepared to engage and retain clients during the waiting period and in treatment. ■



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**Waiting time of the Standard treatment entry group (days)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 22.00 | 2 | 3.9 | 3.9 | 3.9 |
| | 28.00 | 1 | 2.0 | 2.0 | 5.9 |
| | 30.00 | 1 | 2.0 | 2.0 | 7.8 |
| | 32.00 | 1 | 2.0 | 2.0 | 9.8 |
| | 34.00 | 1 | 2.0 | 2.0 | 11.8 |
| | 35.00 | 4 | 7.8 | 7.8 | 19.6 |
| | 37.00 | 1 | 2.0 | 2.0 | 21.6 |
| | 40.00 | 1 | 2.0 | 2.0 | 23.5 |
| | 41.00 | 1 | 2.0 | 2.0 | 25.5 |
| | 42.00 | 1 | 2.0 | 2.0 | 27.5 |
| | 43.00 | 1 | 2.0 | 2.0 | 29.4 |
| | 44.00 | 1 | 2.0 | 2.0 | 31.4 |
| | 47.00 | 4 | 7.8 | 7.8 | 39.2 |
| | 49.00 | 3 | 5.9 | 5.9 | 45.1 |
| | 50.00 | 1 | 2.0 | 2.0 | 47.1 |
| | 52.00 | 1 | 2.0 | 2.0 | 49.0 |
| | 54.00 | 1 | 2.0 | 2.0 | 51.0 |
| | 55.00 | 2 | 3.9 | 3.9 | 54.9 |
| | 56.00 | 1 | 2.0 | 2.0 | 56.9 |
| | 61.00 | 1 | 2.0 | 2.0 | 58.8 |
| | 62.00 | 1 | 2.0 | 2.0 | 60.8 |
| | 63.00 | 3 | 5.9 | 5.9 | 66.7 |
| | 64.00 | 1 | 2.0 | 2.0 | 68.6 |
| | 65.00 | 1 | 2.0 | 2.0 | 70.6 |
| | 71.00 | 1 | 2.0 | 2.0 | 72.5 |
| | 74.00 | 1 | 2.0 | 2.0 | 74.5 |
| | 75.00 | 2 | 3.9 | 3.9 | 78.4 |
| | 78.00 | 2 | 3.9 | 3.9 | 82.4 |
| | 81.00 | 1 | 2.0 | 2.0 | 84.3 |
| | 84.00 | 1 | 2.0 | 2.0 | 86.3 |
| | 89.00 | 1 | 2.0 | 2.0 | 88.2 |
| | 93.00 | 1 | 2.0 | 2.0 | 90.2 |
| | 96.00 | 1 | 2.0 | 2.0 | 92.2 |
| | 105.00 | 1 | 2.0 | 2.0 | 94.1 |
| | 106.00 | 1 | 2.0 | 2.0 | 96.1 |
| | 108.00 | 1 | 2.0 | 2.0 | 98.0 |
| | 116.00 | 1 | 2.0 | 2.0 | 100.0 |
| | Total | 51 | 100.0 | 100.0 | |



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**Waiting time of the Accelerated treatment entry group (days)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 6.00 | 1 | 1.2 | 1.2 | 1.2 |
| | 8.00 | 1 | 1.2 | 1.2 | 2.4 |
| | 9.00 | 1 | 1.2 | 1.2 | 3.7 |
| | 11.00 | 2 | 2.4 | 2.4 | 6.1 |
| | 12.00 | 2 | 2.4 | 2.4 | 8.5 |
| | 13.00 | 8 | 9.8 | 9.8 | 18.3 |
| | 14.00 | 47 | 57.3 | 57.3 | 75.6 |
| | 15.00 | 10 | 12.2 | 12.2 | 87.8 |
| | 16.00 | 2 | 2.4 | 2.4 | 90.2 |
| | 18.00 | 6 | 7.3 | 7.3 | 97.6 |
| | 20.00 | 1 | 1.2 | 1.2 | 98.8 |
| | 21.00 | 1 | 1.2 | 1.2 | 100.0 |
| | Total | 82 | 100.0 | 100.0 | |



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